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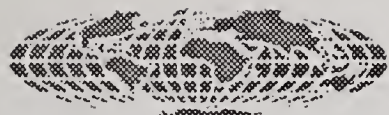
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RS-93-3  
July 1993

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Approved by the World  
Agricultural Outlook  
Board. Summary re-  
leased June 17, 1993.  
*Africa and the Middle  
East* is one in a series of  
six regional reports in  
the 1993 Situation and  
Outlook series.

Other titles are *Former  
USSR, Europe, China,  
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INTERNATIONAL AGRICULTURE AND TRADE REPORTS

# AFRICA AND THE MIDDLE EAST

## Situation and Outlook Series

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## Preface

*Africa and the Middle East* is one of six reports in the International Agriculture and Trade Report series. The 1993 report focuses on the agricultural situation and trade outlook for North Africa and the Middle Eastern countries.

The 1994 *Africa and the Middle East* report will review the food production and marketing performance of countries of the Sub-Saharan Africa region, assess the effects of policy changes, and examine the patterns of agricultural trade and food aid assistance.

## Acknowledgements

Appreciation is extended to the U.S. Foreign Agricultural Service's Agricultural Counselors and their staffs for assistance in ERS's research program. The authors wish to thank Courtney Harold, Kathryn Zeimetz, Gene Mathia, Bill Coyle,

Hunter W. Colby, John Dunmore, and Jerry Sharples, for their sagacious reviews and suggestions. Thanks is also extended to commodity analysts in the Commodity Economics Division and those in the World Agricultural Outlook Board.

## Glossary

<i>Agrostat</i>	FAO agricultural data series.
<i>CIP</i>	Commodity Import Program: U.S. Agency for International Development.
<i>COFACE</i>	French Export Credit Guarantee Program.
<i>EEP</i>	Export Enhancement Program.
<i>FAO</i>	Food and Agricultural Organization of the United Nations.
<i>FSU</i>	The former Soviet Union, comprised of 15 republics: Armenia, Azerbaijan, Belarus, Estonia, Georgia, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Moldova, the Russian Federation, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan.
<i>GDP</i>	Gross Domestic Product.
<i>GSM</i>	General Sales Manager credit guarantee program.
<i>IMF</i>	International Monetary Fund.
<i>Kilos</i>	Kilograms = 2.2046 pounds.
<i>MBD</i>	Million barrels per day.
<i>NAME</i>	North Africa and the Middle East region. North Africa includes Algeria, Egypt, Libya, Morocco and Tunisia. The Middle East includes Cyprus, Iran, Iraq, Israel, Jordan, Lebanon, Syria, Turkey, Yemen, and the Gulf Cooperation Council (GCC), a customs union created in 1981, consisting of Bahrain, Kuwait, Saudi Arabia, Oman, Qatar, and the United Arab Emirates.
<i>ONICL</i>	Office National Interprofessionel des Cereales et Legumineuses-Moroccan Government Grain Purchasing Agent.
<i>UN</i>	United Nations.
<i>WB</i>	World Bank.

*This report uses the April 1993 production, supply, and demand data as updated by the Foreign Agricultural Service. Where FAS does not provide data, FAO Agrostat, ERS estimates, and country data have been used.*



## Summary

The 20 countries that comprise North Africa and the Middle East (NAME) have a limited agricultural resource base and are highly dependent on agricultural imports for their food needs. The region's 320 million inhabitants, with a population growth rate exceeding 3 percent per year, is one of the world's biggest growing markets for agricultural products. The region imported \$29 billion in agricultural commodities in 1992. With the exception of Turkey, Morocco, and Iran, each of the region's countries import over half its food supply. Turkey is the only country that is virtually self-sufficient as well as a large exporter of agricultural products.

U.S. agricultural exports to the region rose 12 percent in 1992 to \$3.2 billion. Increased sales of wheat, rice, vegetable oils, and tobacco helped lift the U.S. share to 11.1 percent in 1992 from 10.2 percent in 1991. U.S. exporters dominate the market for bulk commodities such as wheat and feed grains, however, the European Community (EC) is the region's largest supplier of high-value products such as meat and dairy products, fruits and vegetables and sugar. Suppliers use various export promotion programs to maintain or increase their market share. U.S. export promotion programs such as the General Sales Manager (GSM-102 and 103) programs, the Export Enhancement Program (EEP) and, the Public Law 480 (P.L. 480) food aid program, have been instrumental in this regard. The leading U.S. markets are Egypt, which accounted for 24 percent of U.S. agricultural exports to the region in 1992; Saudi Arabia, with a 16-percent share; and Algeria, with a 13-percent market share. U.S. exporters continue to face intense competition from the EC, Canada, Southeast Asia, and Turkey, whose credit programs, prices, market proximity, and reciprocal trade challenge the U.S. market share.

For January-April 1993, U.S. agricultural exports to the region were already 38 percent higher than at the same time last year. Some factors underlying this increase are greater demand for Western-style foods due to urbanization; low-priced supplies of corn, wheat, and soybeans because of the large 1992 harvest; EEP assistance for some countries; and an increase in feed demand, as a result of expanded livestock production. In addition, a second year of major drought in Morocco has sharply increased its purchases from the United States.

The region's agricultural sector continues to be affected by policy reforms initiated in many countries during the 1980's. These reforms were enacted by governments in order to transform their countries into free-market economies based on outward-oriented growth. Common features for many of the countries have been the sharp reduction or elimination of guaranteed prices, the privatization of input supply, liberalization of agricultural trade, and a reduction or removal of input subsidies. Consumer price subsidies on basic foods have also been reduced in many countries. In some countries, however, political uncertainties, including a rise in Islamic fundamentalism, have created disincentives for private investment and have made agricultural policy liberalization difficult to sustain.

The region's agricultural performance was mixed in 1992. Weather continued to be a major determinant of farm output

in countries with mainly rainfed agriculture, (Algeria, Morocco, Tunisia and Turkey). Cereal production increased for the fourth straight year in the Middle East, with wheat output a record 34.6 million tons, and barley, a record 12.7 million tons. Wheat production reached record levels in Iran, Syria, and Saudi Arabia. Favorable policies also boosted wheat output in Egypt to an all-time high. Total grain output dropped 5 percent in Turkey, following a peak harvest in 1991. In North Africa, a severe drought in Morocco reduced cereal output by two-thirds from 1991. Poor weather reduced yields in Algeria and Tunisia.

Output of vegetable oils and meals increased in 1992 after falling in 1991. Domestic production of oilseeds and products will continue to be limited by water and land constraints. In the Middle East, imports accounted for half of total meal consumption in 1992, with the import share likely to rise as livestock output expands. In North Africa, meal imports comprised more than two-thirds of consumption. Import dependence is even higher for vegetable oils, 77 percent for the Middle East and 82 percent in North Africa. The region's key suppliers are the United States, the EC, Brazil, and Argentina.

The region's livestock sector continued a slow recovery from the combined effects of increased input costs and reduced consumer purchasing power of the late 1980's. Poultry production grew nearly 8 percent in 1992. In the near term, the poultry sector is expected to grow slowly as larger, more efficient, and more financially stable producers expand output. Import dependence, especially for feed grains, will remain high while governments promote poultry self-sufficiency. Potential for increased intake of livestock products is high in the region, with demand expected to increase along with positive income growth and urbanization. Formidable production constraints, including poor infrastructure and management capacity, lack of forage and grazing land for red meat production, and poor feed quality, may fuel meat imports as demand grows.

While trade and tourism revenues rebounded from the Gulf War and reconstruction activity energized the region's economy, some problems persist. Inflation continues unabated in Turkey, despite 5.4-percent growth in Gross Domestic Product (GDP). Egypt's tourism revenues have dipped sharply because of terrorist activities. Iraq continues to suffer under U.N. trade restrictions, with food shortages and high prices. Political strife in Algeria portends further economic disruption. In Iran, oil revenues were \$2 billion below target levels. While a rough balance was achieved in overall Iranian trade, imports were curtailed and this, along with the devaluation in the lira, is likely to raise inflation and unemployment. The Saudi Arabian economy grew 5 percent last year but the government is faced with persistent budget and current account deficits.

The region's economic development and well being is heavily dependent on petroleum and natural gas exports. Prices for these commodities will determine the future purchasing power of oil exporting countries, as well as non-oil exporters who

depend on remittances and financial aid for their foreign exchange revenues.

While petroleum and natural gas export revenues are vital to the NAME region, their central role in agricultural imports has diminished. As export revenues have fluctuated, food

imports have continued their upward trend. Even when oil revenues were sharply curtailed by falling world prices in the 1980's, food imports remained stable. The close correlation between petroleum earnings and agricultural imports of the 1970's diminished sharply in the 1980's and is unlikely to regain its previous prominence.

## North Africa and the Middle East





## North Africa and the Middle East Region Is an Important Agricultural Market

*The North Africa and Middle East region is a major importer of agricultural products. Consumption continues to exceed output, and high population and income growth will continue to drive demand. The competition for this market is intense between the United States, the European Community, Australia, Thailand, Latin America and Turkey and international financial assistance is critical to market maintenance.*

*[Stacey Rosen and John Parker]*

### NAME Region Is Large Importer of Agricultural Products

The 20 countries in North Africa and the Middle East (NAME) are major importers of agricultural products.<sup>1</sup> In 1992, NAME agricultural imports, estimated at \$29 billion, remained at about 10 percent of global agricultural imports. The region's agricultural imports increased dramatically in the 1970's, commensurate with higher petroleum export earnings, but slowed as income gains weakened in the 1980's. Agricultural imports recovered in the late 1980's due to higher demand brought about by rising oil export earnings and a continuing population growth rate of 3 percent. The huge drop in Iraq's imports since the U.N. imposed a trade embargo in 1990 is the main reason NAME agricultural imports dipped between 1990 and 1992. Saudi Arabia is the major NAME agricultural importer, followed by Egypt, Algeria, Iran, the United Arab Republic (UAE), and Turkey (table 1).

### Food Consumption Continues To Rise

The region's food consumption increased about 5 percent annually in the 1980's because of high population growth rates and rising per capita consumption, particularly of cereals. The average daily diet for the region's population improved during the 1980's to over 3,100 calories, because of higher incomes, subsidies on staple foods, policies limiting price hikes for foods not covered by subsidies, modernized and more efficient marketing, and urbanization (appendix table 35). The high rate of growth in use has far outstripped growth in domestic output, which is limited by severe water and land constraints. As a result, food imports have grown.

With the exception of Turkey, Morocco, and Iran, all NAME countries import over half their food supply. In 1990, cereal self-sufficiency (domestic production's share of total supply) in the major NAME importers ranged from 22 percent in Algeria to 99 percent in Turkey (fig. 1). Import dependence is very high in vegetable oils, with self-sufficiency ratios

ranging from 2 percent in Saudi Arabia to 62 percent in Turkey. Meat self-sufficiency has risen dramatically because of government efforts to develop poultry and livestock industries. The corresponding rise in feed demand is one factor behind increased dependence on vegetable meal imports.

Cereals remain the region's most important agricultural import, including wheat, feed grains, and rice (fig. 2). Vegetable oils and meals, meats, dairy products, fruits and vegetables, and coffee and tea are among the other top imports.

Table 1--North Africa and the Middle East: Total agricultural imports in selected years

Country	1983	1986	1989	1990	1992 1/
Million \$					
Algeria	2,509	2,379	3,354	3,225	2,975
Egypt	3,887	3,789	4,044	3,934	3,520
Libya	1,237	1,173	1,293	1,416	1,650
Morocco	996	702	819	799	1,135
Tunisia	524	450	710	651	750
North Africa	9,153	8,493	10,220	10,025	10,030
Bahrain	243	244	276	273	321
Cyprus	203	194	226	254	286
Iran	2,996	1,991	3,176	3,120	2,780
Iraq	2,271	2,094	2,885	1,776	980
Israel	924	870	1,188	1,201	1,380
Jordan	668	578	782	753	975
Kuwait	1,225	1,023	1,201	773	420
Lebanon	602	573	628	556	675
Oman	381	393	443	488	620
Oatar	210	223	224	296	295
Saudi Arabia	5,182	4,244	4,478	4,845	4,980
Syria	878	498	543	766	730
Turkey	286	767	1,613	2,262	1,730
UAE	1,030	1,207	1,742	1,706	1,925
Yemen	758	580	676	805	950
Middle East	17,857	15,479	20,081	19,874	19,047
Total NAME	27,010	23,972	30,301	29,899	29,077

1/ ERS estimate.

Sources: FAO, EC Nimex, and United Nations trade runs.

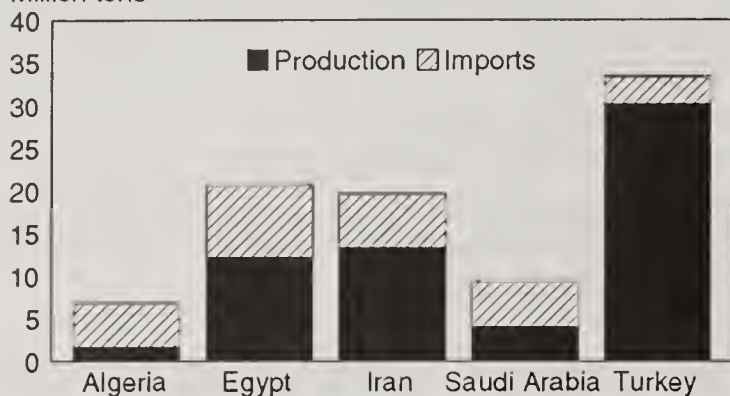
Not official USDA data.

<sup>1</sup> North Africa and the Middle East region. North Africa includes Algeria, Egypt, Libya, Morocco, and Tunisia. The Middle East includes Cyprus, Iran, Iraq, Israel, Jordan, Lebanon, Syria, Turkey, Yemen, and the Gulf Cooperation Council (GCC), a customs union created in 1981, consisting of Bahrain, Kuwait, Saudi Arabia, Oman, Qatar, and the United Arab Emirates.

Figure 1  
Food Self-Sufficiency in Selected NAME Countries, 1990

### Cereals

Million tons



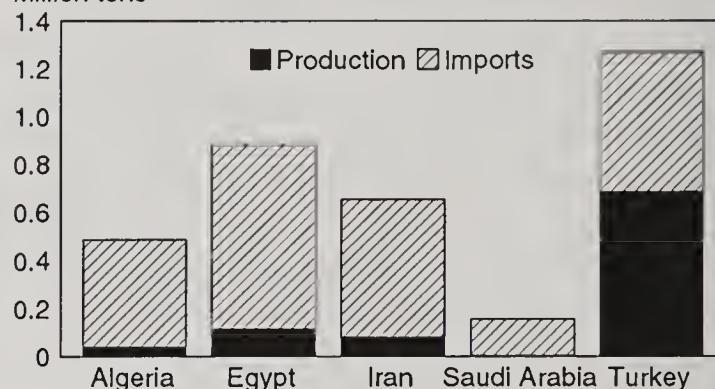
### Meats

Million tons



### Vegetable oils

Million tons



### Milk, excluding butter

Million tons

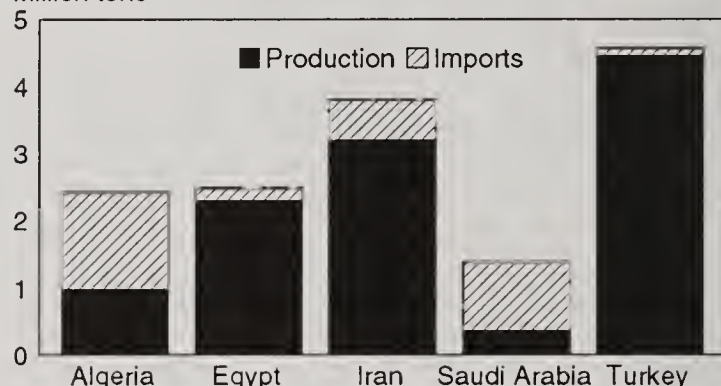
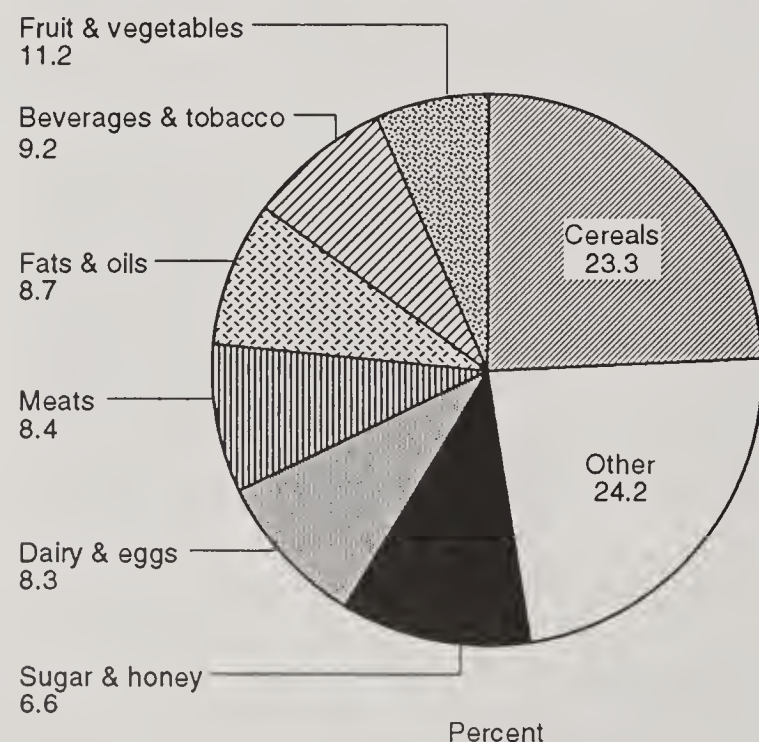


Figure 2  
Commodity Share of NAME Agricultural Import Value, 1992



### Market Competition Intense in NAME Market

Competition for the NAME market has been keen among the 12 EC countries, the United States, Turkey, Latin America, and Australia. The EC has been the major supplier of the region's agricultural imports for two decades. The EC share of the region's agricultural imports increased from about 25 percent during 1983-85 to about 33 percent in 1992 (fig. 3, appendix table 8). The EC provides over 75 percent of the agricultural imports of Cyprus and over half those of Turkey, Syria, Tunisia, and Libya. For the 1990-92 period, EC agricultural exports to the region averaged \$9 billion annually, triple those of the United States.

The United States ranks second among major food exporters to the region, with an 11-percent share (appendix table 7). Turkey and Saudi Arabia are important exporters of agricultural products within NAME.

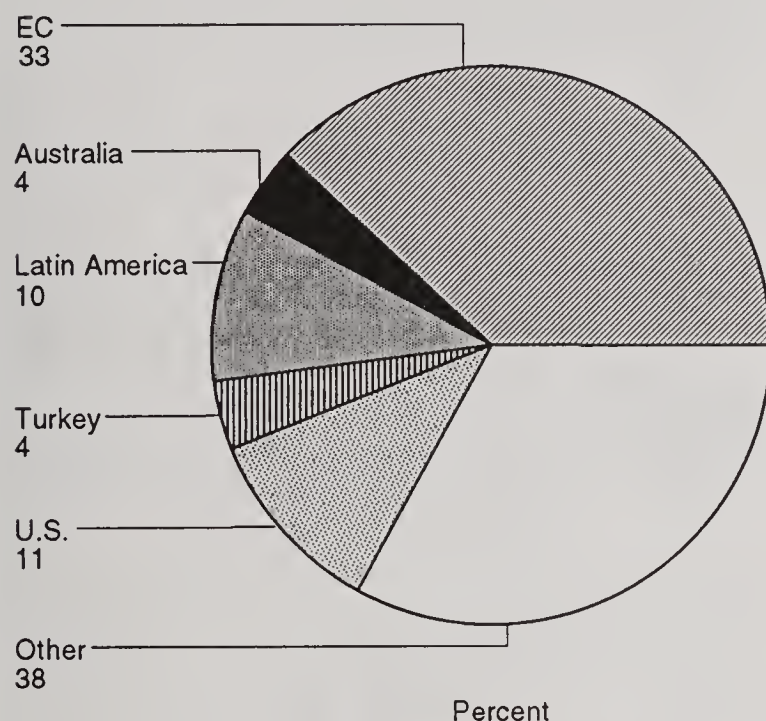
### The EC Is the Leading Supplier of NAME Agricultural Imports

A number of factors underlie the EC's dominant agricultural trade position relative to the United States in NAME. First, market proximity with lower shipping costs gives the EC a price advantage. Second, the EC provides export restitution payments for a wide range of commodities, while U.S. export programs have a higher proportion of bulk items, especially wheat, flour, vegetable oils, and barley. Most of the U.S. exports of vegetable oils through credit programs go to North



Figure 3

### Suppliers' Share of Total NAME Agricultural Import Value, 1992



Africa. Third, the EC is a large importer of agricultural commodities from NAME, totaling about \$4.3 billion in 1990. U.S. agricultural imports from the region in 1992 were \$788 million. Historic and economic ties between the region and the EC are relatively stronger than with the United States. Many NAME guest workers, as well as permanent NAME immigrants, live in Europe.

The EC exports a wide range of products to Iran, Syria, and Libya. These markets have been restricted to U.S. exporters for some time because of their government's support of international terrorism. Since 1986, U.S. policy has prohibited trade with Libya, which is a market for over \$600 million in EC agricultural commodities. U.S. agricultural sales to Iran reached \$50 million in 1992, after remaining at around \$1 million throughout the 1980's.

Finally, EC exporters have many joint ventures for food processing and marketing in the region, which helps them to more easily deal with nontariff barriers such as Arabic labeling and shelf-life requirements. Multinational firms with factories in the EC take advantage of its subsidized sugar prices and export restitution payments to augment exports of high-value products to markets in the region, particularly bakery products and candy.

### Export Promotion Programs Intensify Competition

No matter what the economic and political ties are, for many products price is the most important variable influencing import decisions by NAME countries. Exporters' programs, including food aid, export credit guarantees, and export subsidies, are important in determining exporter market share. The United States, the EC, Saudi Arabia, and Canada are the major grain exporters with export programs in the region.

The United States has a number of export programs. P.L. 480 provides long-term concessional loans under Title I, or food donations under Title II, to needy countries, and the U.S. exports through grants under Title III. The Export Enhancement Program (EEP) offers bonuses which are designed to allow U.S. exporters to compete with subsidized competition in targeted countries. GSM (General Sales Manager)-102 and GSM-103 are government-backed export credit guarantees available for the purchase of U.S. agricultural goods. Commodity-specific export programs include the Dairy Export Incentive Program (DEIP), Sunflowerseed Oil Assistance Program (SOAP), and the Cottonseed Oil Assistance Program (COAP).

Nearly all countries in NAME, except the GCC members, have been P.L. 480 recipients at one time or another. Since the late 1970's, Egypt has received more P.L. 480 commodities than any other country in the world. Wheat and wheat products are the leading commodities shipped under P.L. 480; feed grains, rice, vegetable oils, and dairy products have also been shipped. Since 1985, Algeria, Egypt, Jordan, Lebanon, Morocco, Tunisia, and Yemen have been consistent P.L. 480 recipients.

GSM-102 is a short-term, government-guaranteed export credit program with repayment terms of 6 months to 3 years. GSM-103 is an intermediate-term, government-guaranteed export credit program with repayment terms of 3 to 10 years. Both have been used frequently to enable countries to enhance the amount of U.S. agricultural commodities they purchase. U.S. credit allocations to the region peaked at \$2.5 billion in fiscal year 1989, including over \$1 billion for Iraq and \$200 million for Egypt. Because no credit was allocated to Iraq after July 1990, the region's share of worldwide credit, as well as U.S. credit, declined. A wide range of commodities were shipped under these programs, including wheat and flour, feed grains, cotton, lumber, breeder livestock, and tobacco.

As of May, fiscal year 1993 allocations total \$1.025 billion in Commodity Credit Corporation (CCC) guarantees, through GSM-102 and GSM-103. The top client in the region is Algeria, with an allocation of \$500 million, including \$460 million GSM-102 and \$40 million GSM-103. While cereals dominate the commodity-specific credit available to Algeria, considerable amounts are available for vegetable oils, animal feed, dairy products, and pulses. The second largest major credit recipient is Morocco, with \$220 million in GSM-103 available, mostly for wheat. Turkey has been allocated \$160 million, mostly for cereals and oilseed products. Tunisia has an allocation of \$50 million, mostly for wheat and vegetable oils.

### EEP Targets NAME's Importers

The EEP, in operation since 1985, has targeted most countries in the region for selected commodities, including wheat, barley, flour, frozen poultry, eggs, and vegetable oils. EEP is an export assistance program in which exporters are awarded cash bonus certificates redeemable for commodities in CCC inventories in prior years.



Since 1985, Algeria, Egypt, and Morocco have received the largest volume of EEP-subsidized wheat and wheat flour among countries in the region. Iran and Libya have not been eligible for EEP because of their support of terrorism, and Syria had an EEP for 700,000 tons of wheat which was not approved for similar reasons. Iraq was a large buyer under EEP through early 1990, but all outstanding EEP for Iraq was cancelled in August 1990. New announcements of EEP credit are usually arranged when a given country depletes its allotted amount or when the EEP allocation becomes invalid after it has been available for a one-year period and not used.

Since 1990, EEP has become a more important export program than GSM credit in Egypt, which became reluctant or unable to incur further foreign debt and sought to purchase on a more advantageous cash basis under EEP. Before Egypt's foreign exchange position improved in 1991, it was in arrears on GSM-102 incurred in the late 1980's. In North Africa, the shift from GSM programs to EEP is due mainly to Egypt's increased foreign exchange availability. The GSM programs are currently critically important to Algeria and Morocco because of their foreign exchange shortages and their continued strong import demand. Since 1990, EEP has become the major, active wheat export program in the Middle East, supplemented by small donation programs to Jordan and Lebanon.

### Use of P.L. 480 Diminishes

The use of P.L. 480 Title I credit in fiscal year 1993, is considerably below that of the late 1980's. For example, P.L. 480 Title I credit used by Egypt was \$150 million in fiscal 1991, but only \$41 million of the \$150 million allocated for fiscal 1992 was used. The fiscal 1993 allocation for Egypt was reduced by \$50 million. P.L. 480 aid for Morocco and Tunisia was also reduced. Reductions in P.L. 480 Title I to Egypt, enabled the Former Soviet Union (FSU) to receive extra food aid without renewed Congressional appropriations. Egypt now prefers to buy wheat and flour for cash through the EEP, as new P.L. 480 Title I guidelines now require repayments in dollars instead of local currency. Other countries with foreign exchange shortages still find P.L. 480 terms attractive, such as the 10-year grace period and the up-to-30-year repayment provision at a low interest rate. For fiscal 1993, Yemen received \$5 million in Title I for rice.

Large U.S. export programs have helped maintain a stable U.S. market share in NAME, particularly in the intensely competitive wheat market. During fiscal years 1985-91, U.S. GSM programs covered an average 83 percent of annual U.S. wheat sales to participating Middle Eastern countries, and 55 percent to North African participants. In the 1986-92 period, EEP covered an average of 68 percent and 66 percent of annual U.S. wheat sales to Middle East and North African program participants, respectively. In the same period, export programs helped maintain a U.S.-wheat market share of 18-22 percent in the Middle East, and more than a third in North Africa (fig. 4).

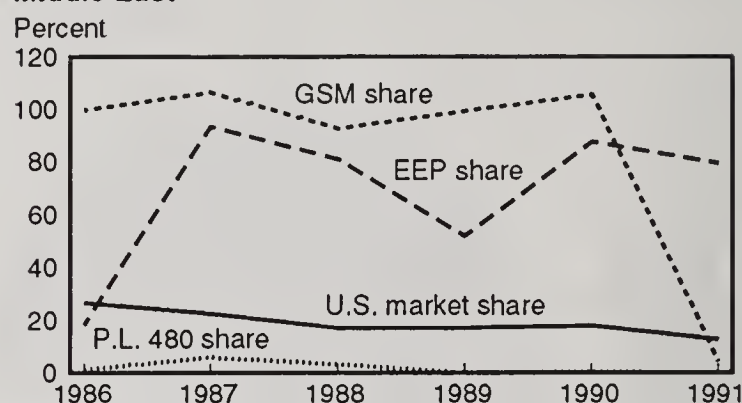
### Suppliers Offer Assorted Export Incentives

France's agricultural export credit program, Compagnie Française d'Assurance du Commerce Extérieur (COFACE), origi-

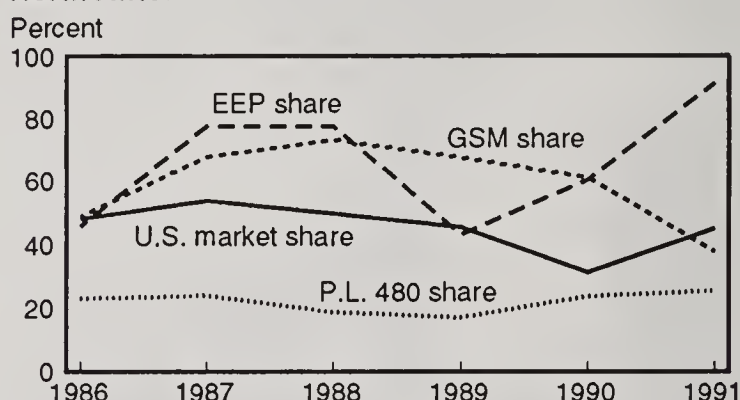
Figure 4

## U.S. Wheat Export Programs in NAME

### Middle East



### North Africa



Note: Discrepancies in shipment dates cause export programs to cover over 100 percent of U.S. exports in some years.

nally offered credit guarantees covering political and commercial risks with a 6-month repayment period. In the late 1980's, France liberalized its agricultural export credits for "traditional" markets, such as those in North Africa. Credit guarantees were expanded to allow 2- to 3-year and even up to 7-year, repayment terms, with a guarantee covering 95 percent of the total amount.

Great Britain's export credit program covers a number of cereals. In 1984, it authorized the Export Credit Guarantee Department (ECGD) to extend up to 2 years the maximum terms it normally offers for bulk grain exports. In addition, credit terms were extended for up to 3 years in cases where competitors were offering such credit.

Besides individual country programs, the EC operates an export restitution program. Traders apply for refunds for the specific quantity they export. The refund amount is determined in relation to other exporters' prices, usually the lowest competing quote offered to the importing country. For example, EC barley exports to Saudi Arabia have received export restitutions of up to \$70 per ton since 1985.

Since 1971, Canada has operated an export market development program that provides credit assistance for up to 50 percent of purchases by private companies seeking to develop a foreign market. The program includes manufactured goods and processed agricultural items. Canadian companies have applied this program in some of the countries in the region.



Both Canada and Australia export wheat through national marketing boards that determine offer prices on the basis of product quality and prices of other suppliers. Canada's Export Development Corporation (EDC) operates like the U.S. GSM-102 program, backing private loans with government guarantees to repay in case of default. Canada has provided such EDC credit to Algeria, Tunisia, and Morocco.

### **U.S. Agricultural Exports to NAME Climb 12 Percent in 1992**

U.S. agricultural exports to the NAME region rose 12 percent in 1992 to \$3.24 billion (fig. 5). The leading markets were Egypt, at \$766 million (24 percent share), Saudi Arabia (\$505 million or 16 percent), and Algeria (\$437 million or 13 percent). Sales to Iraq, which comprised 21 percent of U.S. exports to the region in 1988, have been nil since the latter half of 1990. Although U.S. sales to Turkey and Israel were up sharply, sales to other regional markets have not yet increased sufficiently to offset the loss of the Iraqi market.

Cereals and products accounted for \$1.8 billion (56 percent) of the value of U.S. agricultural exports to the region in 1992 (fig. 6). Wheat had the highest value at nearly \$900 million (25 percent). Corn was second, at nearly \$500 million. Vegetable oils, rice, and soybean meal were, respectively, the third, fourth and fifth largest exports.

Highlights in calendar year 1992 included a 7-percent increase in wheat exports to 7.8 million tons. Shipments to Egypt, by

Figure 5  
**U.S. Agriculture Exports to NAME Region, 1983-92**

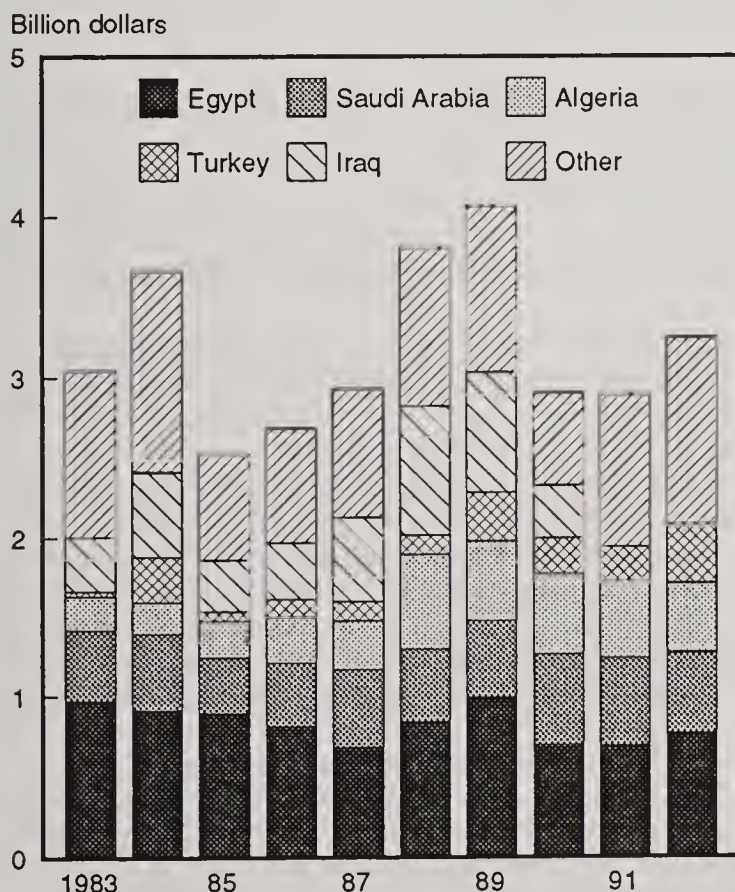
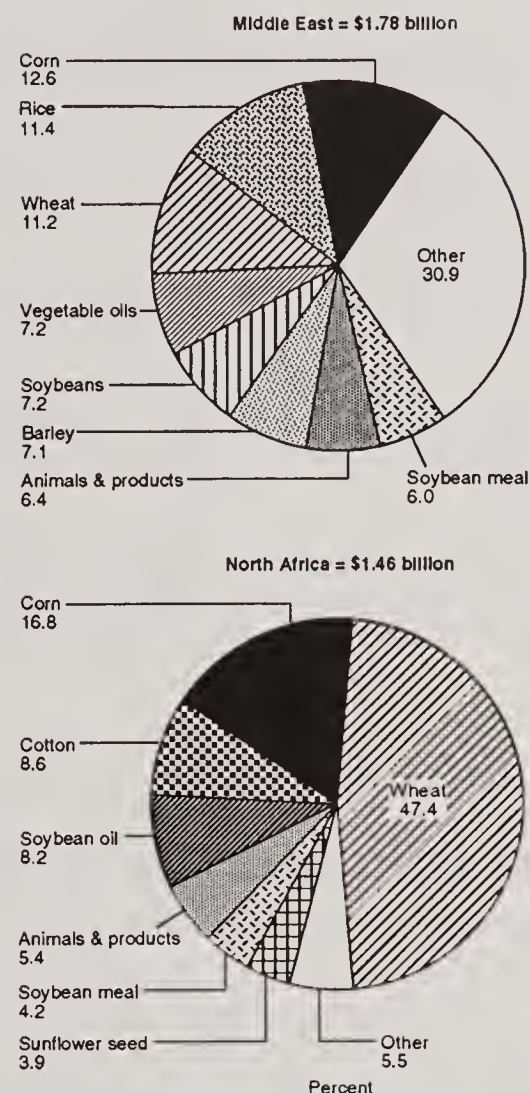


Figure 6  
**U.S. agricultural exports to NAME, 1992**



far the leading U.S. wheat market in the region, increased 23 percent to a record 4 million tons, plus 113,144 tons of flour. U.S. corn sales to the region declined 8 percent to 4.4 million tons because of increased competition from other suppliers. Increased barley shipments to Jordan and Algeria partially offset a 30-percent drop in U.S. barley exports to Saudi Arabia. U.S. vegetable oil exports rose 38 percent, exceeding 640,000 tons in 1992, more than double 1990 exports. This increase can be attributed to gains in Algeria and Tunisia, a result of U.S. export-subsidy programs.

### **Outlook Optimistic for U.S. Exports to NAME in 1993**

For 1993, U.S. agricultural exports to NAME are expected to increase because of these factors:

- U.S. agricultural exports to the region for the first third of 1993 are already 38 percent greater than for the same period last year.
- Expanded U.S. EEP programs should help ensure U.S. price competitiveness in key markets such as Algeria, Egypt, and Morocco.
- Morocco is suffering a second consecutive year of drought, and U.S. sales to Morocco in the first 4 months of 1993,



are already five times greater than for the same period in 1992.

- Large U.S. harvests of corn, wheat, and soybeans in 1992 have provided ample supplies of commodities for export at relatively low prices.
- The region's high population growth rate (3 percent) is driving increased food demand.
- Expansion of livestock sectors, especially in Iran, Jordan, and Turkey, is increasing feed demand.

While the above factors will help boost U.S. exports, some others will limit the amount of the gain. Among these are intense competition from the EC, Canada, Thailand, Vietnam, and Turkey.

By the end of the century, total NAME grain imports are projected to increase slightly more than the population growth rate, compared with an estimated 47 million tons imported in

1992. Wheat and wheat flour are expected to total approximately half of grain imports. Key determinants of cereal import demand in NAME during the 1990's will be (1) the ceiling on further increases in cereal yields, (2) projected per capita income growth that will drive a small increase in per capita consumption in these mature markets, and (3) continued high population growth.

Import demand for oilseeds and products is expected to grow more slowly during the remainder of the 1990's, after doubling during the last decade. Population growth is expected to be the main factor behind increased vegetable oil demand, because per capita consumption is now considered to be at its upper limit. Feed demand will also slow because NAME countries, with the exception of Saudi Arabia, have reduced or eliminated feed subsidies. Renewed, but slower growth in NAME poultry and livestock sectors is anticipated as the industries consolidate and become more efficient. Relatively low meat intake levels in most countries leave room for increased consumption as incomes rise.

#### *Commodity Market Highlights and Policy Developments*

## **Wheat Consumption in NAME Rising With Population**

*Both wheat production and consumption are forecast to grow in the near term, but only at the population growth rate. All NAME countries have subsidized consumer purchases of wheat flour and bread. These policies helped transform NAME into a mature wheat market in which per capita consumption is among the highest in the world. As many NAME countries undertake major economic reforms, there has been a shift toward the liberalization of wheat imports, privatization of wheat markets, and reduced input and consumer subsidies. Some degree of wheat self-sufficiency remains an important goal of nearly all the region's wheat producing countries. [Mary Burfisher]*

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Middle East wheat output rose about 4 percent in 1992 to 34.6 million tons. Production in Iran was up almost 15 percent, and down slightly in Iraq. Output in Turkey fell to a normal level in 1992, while Saudi output was a record high. North African wheat production fell 26 percent to 9.7 million tons, principally because of the drought-devastated harvest in Morocco, which offset record output in Algeria and Egypt (table 2).

Most countries in NAME have actively stimulated wheat output because it is a staple food and, as a critical import, a major user of foreign exchange. Production policies include maintaining domestic-wheat producer prices above world prices, import restrictions, and subsidized inputs (table 3). From 1980-92, producer support policies helped stimulate an average annual increase in output of 3.3 percent in the Middle East, and 3.8 percent in North Africa. Most of the increase is due to improved yields. In Saudi Arabia and Egypt, where

the crop is largely irrigated, yields now exceed those of the United States. In most countries, however, yields remain relatively low.

As part of a broad policy shift within the region toward market liberalization and reform, most countries began to reduce government intervention in their agricultural sectors in the late 1980's and introduced some privatization of marketing and trade. Yet, wheat-producer-support policies are being maintained in most countries, and some degree of self-sufficiency in wheat remains a goal of the major wheat producers.

All NAME countries have subsidized consumer purchases of wheat flour and bread. These policies helped transform NAME into a mature wheat market in which per capita consumption is among the highest in the world. Since 1980, per capita consumption increases have stabilized, and growth in total use has mostly been driven by population growth. De-

Table 2--Wheat production, consumption and imports in North Africa and the Middle East, 1992

Country/region	Yield	Production	Imports	Exports	Consumption	Ending Stocks
	Tons/ha	-----1,000 tons-----				
Middle East	1.72	34,642	8,110	4,750	37,967	9,047
Bahrain	0.00	0	50	0	50	0
Cyprus	1.17	7	85	0	92	0
Iran	1.42	10,200	2,000	0	11,800	4,025
Iraq	0.80	1,400	500	0	2,200	25
Israel	2.82	240	730	0	995	225
Jordan	0.89	80	750	50	850	170
Kuwait	0.00	0	200	0	200	0
Lebanon	1.80	18	350	0	368	0
Oman	0.00	0	165	0	165	0
Qatar	0.00	0	0	0	0	0
Saudi Arabia	5.54	4,100	180	2,400	1,650	1,846
Syria	2.03	2,800	500	0	3,100	1,087
Turkey	1.78	15,700	1,000	2,300	14,800	1,669
UAE	0.00	0	200	0	200	0
Yemen	1.26	97	1,400	0	1,497	0
North Africa	1.59	9,683	14,700	0	25,006	2,264
Algeria	1.04	1,770	3,900	0	5,700	570
Egypt	5.26	4,617	6,000	0	10,450	667
Libya	0.52	150	1,000	0	1,150	0
Morocco	0.70	1,562	3,200	0	5,622	177
Tunisia	1.61	1,584	600	0	2,084	850
Total NAME	1.43	44,325	22,810	4,750	62,973	11,311

Source: USDA, FAS, PS&D Database, April 1993.

mand in the Middle East rose an average 2.2 percent annually between 1980-92, and by an annual average of 3.2 percent annually in North Africa.

In some countries, including Morocco, Egypt, and Tunisia, recent economic policy reforms have included the reduction or elimination of consumer subsidies for staple foods, including some breads. In Algeria, bread and wheat flour continue to be subsidized, while controlled prices for other food items are being increased.

Strong production gains relative to consumption growth have enabled the NAME region to slightly increase its wheat self-sufficiency. In 1992, Middle East wheat production equaled 91 percent of its consumption, compared to 80 percent in 1980 (fig. 7). North Africa production equaled 39 percent of its consumption, compared to 36 percent in 1980 (fig. 8). Regional self-sufficiency reflects varying performance by individual countries. Saudi Arabia has become a major exporter, in recent years exporting about one-half its crop. Turkey became a substantial wheat trader in the late 1980's. For most other NAME countries, imports account for an increasing share of consumption.

In 1992, wheat imports by the Middle East fell 20 percent to 8.1 million tons, because of large harvests and reduced exports. North Africa's wheat and flour imports rose 11 percent to 14.7 million tons. Most of the increase in North Africa

Figure 7

#### Wheat Consumption in the Middle East, 1980-92

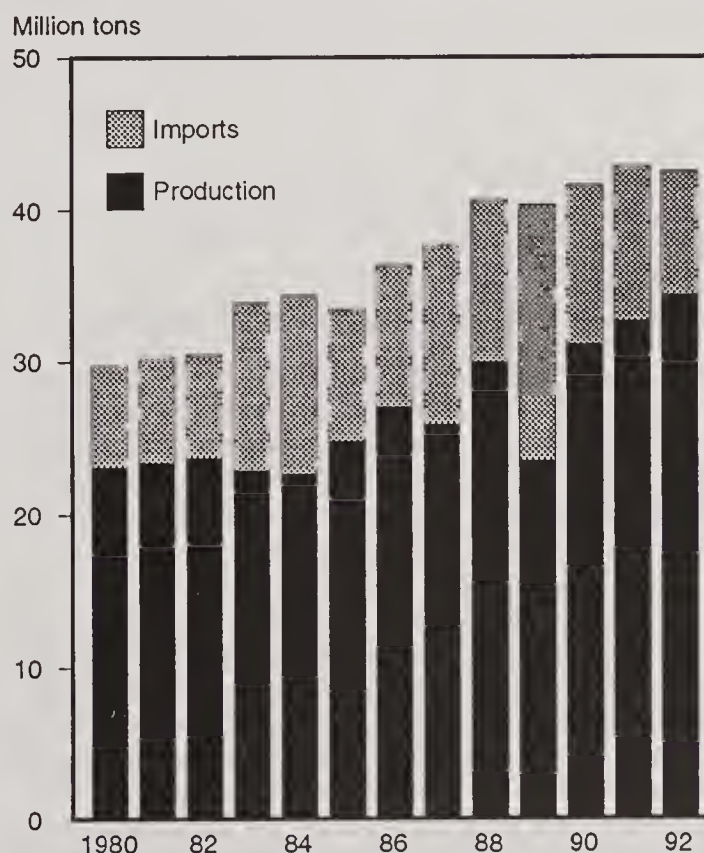




Table 3-- Wheat policies in selected NAME countries, 1992

Country	Producer policies	Consumer policies
Algeria	Guaranteed producer price increased in late 1991 to stimulate production and reduce imports; privatization of state farms and input supply.	Bread and flour subsidies maintained while other food subsidies reduced.
Egypt	Inputs partially subsidized but acreage and marketing controls removed. Wheat producer price unchanged in 1992. Flour importing privatized with wheat importing to be privatized in 1993.	Baladi bread prices subsidized. Price controls on higher quality breads eliminated in December 1992.
Jordan	Guaranteed producer price intended to stimulate domestic production.	
Morocco	Soft wheat is the only commodity still provided a guaranteed price. Soft wheat support prices are planned to be eliminated.	Wheat flour is subsidized. Subsidy is declining and its elimination is planned.
Saudi Arabia	High government support price and subsidized inputs. Licenses to produce to be introduced to reduce domestic wheat output. Wheat imports banned.	Subsidized consumer prices.
Tunisia	Wheat prices increased in 1991/92 to stimulate output and government procurement. Government objective is to reduce imports.	Wheat consumer subsidies reduced in August 1992, accompanied by increase in grants for low-income households.
Turkey	Producer prices increased in 1992. Wheat imports privatized, with tariff on private imports only.	

Sources: USDA, FAS, agricultural attache reports.

was by Morocco, which suffered a devastating drought in 1992.

### ***U.S. Export Programs Help Maintain Market Share***

In calendar year 1992, the United States exported 7.8 million tons of wheat to NAME, worth almost \$1 billion and representing a 7-percent increase in volume from 1991 (table 4). Wheat and flour exports to Egypt, which account for over half of U.S. exports to the region, rose 23 percent to 4.2 million tons.

The NAME wheat market is extremely competitive, with the United States vying for market share with the EC, Australia, and more recently, Turkey, Saudi Arabia, and East European states. Export programs that reduce the purchase price, or provide credit, have become increasingly important marketing tools in the world wheat market and cover a substantial proportion of wheat imports by some countries. In Egypt, for example, nearly 70 percent of wheat and flour imports in 1991

were covered by export programs, including aid and grants following the Gulf War.

Egypt is the largest U.S. market in the NAME region. In calendar year 1991, over 90 percent of U.S. wheat sales to Egypt was covered by EEP. In fiscal year 1992, Egypt purchased 275,000 tons of wheat under P.L. 480 and 3.7 million tons under EEP. GSM programs in Egypt are now valid for wheat flour imports, but only by the private sector.

### ***Region Imports Wheat and Flour, But Mix Is Changing***

In 1991 and 1992, flour accounted for an increasing share of U.S. wheat exports to the Middle East, mainly because of the large increase in flour sales to Yemen. In North Africa, the reverse occurred (table 5). Egypt has recently brought nine new flour mills on line, with a combined milling capacity of 3,300 tons of wheat per day. Morocco and Tunisia have excess milling capacity. In November 1991, Algeria signed an agreement with Morocco to import and mill French wheat.



Figure 8

**Wheat Consumption in North Africa, 1980-92**

Million tons

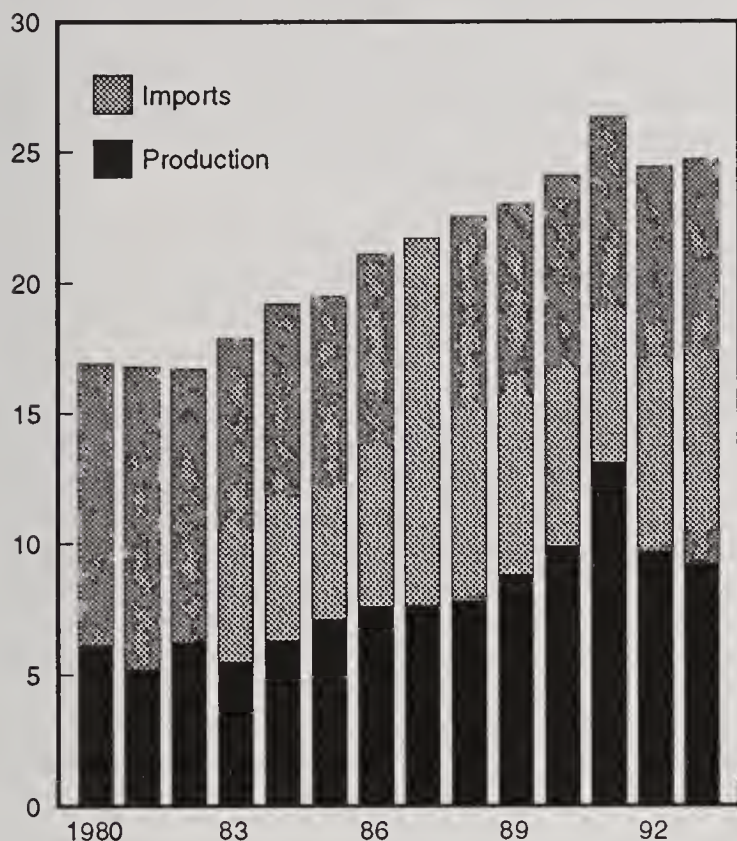


Table 4--U.S. wheat exports to North Africa and the Middle East, 1991-92

	Quantity		Value	
	1991	1992	1991	1992
	1,000 tons		Million \$	
Middle East	1,295	1,737	155	233
Cyprus	38	63	5	8
Israel	507	626	68	95
Jordan	386	243	38	32
Kuwait	28	25	3	4
Saudi Arabia	0	1	0	0
Turkey	1	0	0	0
Yemen	334	780	41	93
North Africa	5,975	6,075	578	714
Algeria	1,667	1,010	156	124
Egypt	3,480	4,199	342	483
Morocco	442	678	46	82
Tunisia	385	188	34	25

Source: USDA, FATUS, calendar year basis. Wheat and wheat flour in grain equivalent. Exports to Saudi Arabia are seed.

Table 5--Trends in U.S. wheat and wheat flour exports, 1985-92

	Grain	Flour	Flour share
	1,000 tons		Percent
Middle East			
1985	1,824	11	0.8
1986	2,224	188	10.4
1987	2,210	306	15.9
1988	1,659	119	8.9
1989	2,489	149	7.6
1990	1,876	45	3.2
1991	1,122	154	15.8
1992	1,450	211	16.6
North Africa			
1985	2,814	436	17.5
1986	5,856	670	13.5
1987	5,799	758	15.2
1988	6,613	655	11.9
1989	5,613	633	13.4
1990	4,294	465	12.9
1991	5,117	297	7.4
1992	5,579	144	3.4

Source: USDA, FATUS, fiscal-year basis. Flour share calculated as grain-equivalent share of total wheat and wheat flour exports.

The indirect sale of French flour to Algeria prompted a modification in the U.S. GSM and EEP programs to Algeria to include U.S. wheat milled in Morocco. Tunisia is now seeking U.S. GSM credit on wheat that would be milled in Tunisia and re-exported to Algeria. The trend toward reduced North African flour imports will likely continue, although the privatization of Egyptian wheat flour imports in December 1992 is creating a small boom for U.S. flour sales.

**Record Wheat Harvest in Egypt**

In 1992, Egypt harvested its sixth consecutive record wheat crop. The Egyptian Government promotes wheat production because of its importance in the diet, although domestic output is not as economical as importing. Seed, credit, irrigation, and machinery are subsidized, but fertilizer subsidies have been eliminated. Recent production increases have been spurred in part by Egypt's move to liberalize production and marketing controls, including the elimination of acreage and procurement requirements. As profitability increased, the area planted rose more than 50 percent from 1987 to 1992. Wheat acreage is now considered to be at its maximum. It is limited by the profitability of other crops and by mandatory cotton plantings, until the 1994 season when controls are lifted. Recent production increases have also been a result of high yields achieved with the adoption of higher-yielding, longer stem, white wheat varieties. Only a small portion of Egyptian wheat is procured by the government. Most is consumed where it is produced or sold in rural markets.

Egyptian per capita wheat consumption is among the highest in the world, but consumption patterns are in transition. Wheat demand is driven by a population growth rate of 2.3



percent and a trend toward higher bread intake, as subsidies on other basic foods are reduced or eliminated. Demand is likely to shift toward lower-quality wheats as prices of fine flours and their products rise. Consumers pay only one-third the cost of baladi bread, made from coarse, 82-percent extraction flour. Other types of fine breads and pastries are no longer subsidized, and their retail prices were decontrolled in December 1992.

Egypt's 1992 wheat imports of 6 million tons were up slightly from 1991, despite a record high harvest. Imports in 1993 could rise in order to build a 2-month supply of stocks as Egypt takes advantage of lower import prices. In October 1992, the government completely liberalized 72-percent extraction wheat flour imports to allow private sector importing, and freed the domestic sales price for that flour. This action, combined with bans on milling 72-percent flour, are stimulating large 1993 flour imports. Wheat grain imports are expected to be liberalized in July 1993, with both public and private agencies permitted to import.

Since 1990, Egypt has increasingly become a cash wheat market. U.S. GSM credit was discontinued in 1990 and 1991 because of Egyptian arrears. The Egyptian Government currently has no functioning credit program, and agreements with the International Monetary Fund (IMF) that include debt ceilings preclude Egypt from accepting new credit. At the same time, Egypt's foreign exchange availability has improved due to debt forgiveness and rescheduling. In 1992, the United States resumed GSM credit for wheat flour sales to the private sector (table 6).

Egypt's import preferences are driven by price as well as taste. Milling characteristics are also a factor. Egypt prefers U.S. and Australian white wheat, and will pay a premium for Australian wheat. Australia has a long-term agreement to provide Egypt with 10 million tons over a 5-year period. In 1992, Australia exported 1.2 million tons of wheat to Egypt.

### ***Algerian Wheat-Import Dependence Rising***

Algerian wheat output fluctuates widely because of weather. Better weather in 1992 led to a 1.8-million-ton harvest, compared with 775,000 tons in 1990. An extended period of dry weather in western Algeria is expected to slightly reduce the 1993 wheat harvest. Productivity in the wheat sector, as in Algerian agriculture generally, has been hampered by a shortage of inputs, an uneducated work force, poor marketing infrastructure, and especially by a lack of irrigation. Yields are low, and harvested area declined nearly 25 percent between 1980 and 1991. Wheat self-sufficiency fell from 70 percent in 1970 to 31 percent in 1992.

Since 1985, the Algerian government has sought to reverse these trends by privatizing agriculture, which has been dominated by the state. In 1986, large state farms were divided into small, collectively run ones. In 1990, additional land reform laws were passed, including an improved land registry, land-use specifications, and the return of some land that had been nationalized in the early 1970's. There has been some instability in the land reform program, with some collectives

now being further divided into individual plots, while others continue to operate as state farms.

Land reform is expected to improve farmer response to producer price incentives. Guaranteed prices are provided on wheat and other crops and are well above import prices, at official exchange rates. Wheat prices were raised sharply in late-1991 to offset rising input costs. The 1993 price was maintained at the 1992 level, but declined in real terms because of a 30-percent inflation rate.

Farm inputs can now be freely imported by private sector companies and farmer collectives. However, because credit is reserved for state agencies, private importers have so far had limited involvement in importing.

Increased wheat consumption has been driven by rapid population growth and consumer subsidies for bread and other basic foods. Consumer subsidies were reduced in 1982, when the economy began to weaken. After nearly a decade of steady progress toward economic liberalization, consumer price subsidies on all food staples except milk, bread, wheat flour, and semolina were removed in June 1992. Prices on other basic food items are now subject to controlled price margins. International donors have recommended the continued reduction of general food subsidies and increased targeting of neediest groups. In 1992, the price of bread, a staple and a politically sensitive commodity, was kept at the 1991 level.

Algeria's 1992 wheat imports of 3.9 million tons were somewhat lower than in previous years because of two consecutive good harvests. The United States accounts for about 40 percent of Algeria's wheat imports. Algeria's import capacity is constrained by foreign exchange shortages, so U.S. GSM credit is critical to maintaining U.S. market share.

In 1990 and 1991, EEP and GSM credit covered all U.S. wheat sales to Algeria. In 1992, Algeria was granted a GSM package of \$500 million for wheat and other commodities and received 1.6 million tons of U.S. wheat under EEP. In November 1992, Algeria signed an agreement with France to purchase up to 1 million tons of wheat and 50,000 tons of flour under COFACE.

While private sector importers may now import cereals, the Algerian government effectively remains the only importer because of its control of the infrastructure for docking and storage.

For the near term, Algeria is expected to import an increasing volume of flour because of inefficiencies in its flour milling industry.

### ***Drought in Morocco Leads To Increased Imports***

A second consecutive year of drought is expected to reduce Morocco's 1993 wheat harvest to 1.4 million tons, less than one-third the record-high 1991 crop. With stocks low, Morocco is expected to import a record amount of wheat in 1993/94. In 1992, Morocco imported 3.2 million tons of wheat, double 1991 imports. Beginning in 1983, Morocco liberalized its agricultural sector in an effort to increase pro-

ductivity and profitability, and stimulate output in key farm sectors. Policy reform measures include reduced government intervention in marketing and importing, higher food prices, and a reduction or elimination of input subsidies. In the wheat sector, policy reforms contributed to an increase in area from

2 million hectares in 1983 to 2.6 million in 1991, and a near doubling of yields during the same period.

Since 1989, the Moroccan Government has only provided a support price for soft wheat, eliminating the support price for durum and all other grains. Greater wheat self-sufficiency

Table 6--Egyptian wheat imports by country and program, 1991

Commodity/ program	U.S.	Australia	Turkey	Saudi Arabia	Canada	EC total	France	Italy
Tons								
Wheat								
Kuwaiti Government grant	304,055	52,500	236,857					
French Gulf War commodity aid						150,000	150,000	
Italy- donation						15,000		15,000
EC exceptional food aid						110,000		
EC exceptional war aid								
Canada food aid					32,000			
U.S. Export Enhancement Program	1,939,000							
U.S. PL 480 Title 1	941,000							
Total program imports	3,184,055	525,000	0	236,857	32,000	275,000	150,000	15,000
Total wheat imports	3,184,055	1,642,000	12,000	236,857	32,000	349,000	na	na
Wheat flour								
French flour agreement						37,000	37,000	
French Gulf War commodity aid						30,000	30,000	
U.S. PL 480 Title 1	346,000							
Total program imports	346,000	0	0	0	0	67,000	67,000	0
Total flour imports	468,000					145,000	na	na

na = not available.

Source: U.S. Agricultural Attache, Grain and Feed Report No. EG2017, March 1992.



continues to be a goal. Nevertheless, the government is moving toward the elimination of soft wheat support prices and has already eliminated seed subsidies. Credit is still subsidized and technical and material assistance is provided by the Ministry of Agriculture.

Until recently, grains were imported under a state monopoly, ONICL (Office National Interprofessionnel des Cereales et Legumineuses). This year's import needs have accelerated the reduction of government's role in trade, and durum imports are now freely permitted by licensed traders. Imports must meet quality standards, and importers pay a fixed levy, rather than a variable one with fixed entry/reference price. Currently, wheat millers are still unable to contract directly for imports, and must buy from ONICL-licensed agents, traders, or cooperatives.

Millers currently pay about \$290 per ton for wheat, considerably above the world price. Millers are then subsidized to provide soft wheat flour to consumers at fixed retail prices. Higher-quality wheat is not subsidized. Retail wheat prices have been increased in recent years, and the World Bank is requiring a continued reduction in food subsidies as a condition of further financial support.

Morocco's wheat market is very competitive and price responsive. The U.S. share of Morocco's wheat imports fell from 32 to 20 percent between 1991 and 1992, mainly due to competition from Turkey, Romania, and Yugoslavia. Also, the United States suspended GSM-102 and 103 programs from August 1991 to May 1992 because of arrears. In 1992/93, with the resumption of GSM credit, the U.S. share of Morocco's soft wheat imports rose to 60 percent, and GSM-103 covered 80 percent of the 1.4 million tons nondurum U.S. wheat sales to Morocco. In fiscal year 1992, EEP covered 1.2 million tons of wheat sales to Morocco. Morocco also imports U.S. wheat under P.L. 480 Title I, valued at \$6 million in fiscal 1992/93. The fiscal 1993 Title I program provides \$10 million for wheat to Morocco.

### ***U.S. Wheat Exports to Israel Rise***

In Israel, disastrous weather left up to 25 percent of the 1992 wheat crop (240,000 tons) of wheat unfit for breadmaking. This has led to a slight increase in the regulated, imported-wheat content of bread. Virtually all milling wheat is imported from the United States as part of Israel's commitment to import at least 1.6 million tons of American bulk food and feed grains annually. In 1992, U.S. exports amounted to 626,000 tons of wheat. Israel also imports small amounts of feed wheat from the EC, East Europe, and Turkey. Demand for wheat has been boosted by the inflow of refugees from the FSU, which resulted in a 5.5-percent population growth rate in 1991, following a 3.3-percent increase in 1990. Flour and bread prices are government controlled, but have increased with the devaluation of the Israeli sheqel.

Favorable weather is expected to lead to a good crop for 1993. The year 1994 marks the 7-year cycle, when most fields are traditionally left fallow for religious reasons. Thus, wheat imports are expected to rise, creating a periodic opportunity to increase U.S. wheat exports to Israel.

### ***Yemen: A Fast-Growing Wheat Market***

Wheat imports by Yemen have increased markedly in the past decade because of its rapidly increasing population, a shift in consumer taste toward wheat-based breads, and subsidized consumer wheat prices. The massive return of Yemeni workers, mostly from Saudi Arabia following the Gulf War, also boosted wheat demand. Domestic output accounts for only 6 percent of total consumption. Prospects for wheat expansion are limited by a degradation of land resources and severe constraints on Yemen's financial capacity to invest in the sector.

In 1992, Yemen imported 1.4 million tons of wheat and flour. The country's weak financial position has led to a liberalization of its imports, with importers having to arrange their own foreign exchange in private markets. Wheat, rice, and medicines are exceptions that are provided with a preferential, controlled exchange rate. Wheat imports are handled by the private sector, but importers must sell 70 to 90 percent to public sector distributors who, in turn, sell wheat to shops at a fixed cost.

The United States accounts for about half of Yemen's wheat imports, competing with the EC for wheat and flour sales, while Australia provides mainly wheat. Export programs are often decisive in the Yemen market. In 1992, GSM credit amounted to \$30 million, and nearly 500,000 tons of wheat were imported under EEP. For 1993, the U.S. share is rising as a number of smaller suppliers drop out. U.S. shipments of wheat and flour could approach 1 million tons.

### ***Record Harvest in Tunisia***

Tunisia's record wheat harvests in the last 2 years left it self-sufficient in durum wheat, although still importing bread wheat. The 1993 harvest is forecast at 1.5 million tons, slightly down because of poor rainfall at the beginning of the season. For 1993/94, imports are forecast to decline to 550,000 tons, down from 625,000 tons in 1992/93.

Tunisia has achieved some liberalization of its agricultural sector. However, the government continues to play a major role as the sole purchaser of domestic and imported wheat, and through its use of fixed prices throughout the wheat sector. Input subsidies were reduced in 1991, and wheat prices were increased 6.1 percent for durum and 7.6 percent for bread wheat in 1991/92 in order to increase procurement and farmer profitability.

Bread prices are subsidized. The government increased the retail prices for couscous, semolina, and bread by about 5 percent in late 1992. The aim is to progressively reduce subsidies on basic foods. Simultaneously, in order to protect the poor, grants are being increased in a shift of subsidies toward targeted programs.

The Tunisian wheat market is an extremely competitive. The United States vies for the market with France, Canada, Turkey, Saudi Arabia, and Australia. Tunisia imports U.S. wheat under the P.L. 480 Title I, GSM 103 and EEP programs. In fiscal year 1992, Tunisia was allocated \$25 million for wheat



purchases. EEP accounted for 100,000 tons of wheat sales in fiscal 1992, and 242,000 tons in the first half of fiscal 1993.

### ***Turkey and Saudi Arabia Are the Region's Two Wheat Exporters***

Wheat, Saudi Arabia's most important crop, is grown under irrigation, with yields dependent primarily on temperature conditions and the level of inputs. As a result of massive wheat subsidies, Saudi Arabia achieved wheat self-sufficiency in 1984. In 1986, the Kingdom banned wheat and flour imports and became an exporter.

A record 1992 crop and large carry-over stocks created continued pressure to export in 1992/93. With 4.1 million tons grown in 1992 and domestic consumption estimated at less than half of output, Saudi Arabia exported 2.2 million tons in 1992/93 and increased its stocks. Exports are expected to decline to 2 million tons in 1993/94, reflecting a decline in government buying and the expectation of lower output in 1993. The government is the exclusive miller and marketer of wheat.

The government actively promoted wheat output in the past but is now attempting to reduce output to 2 million tons, a level commensurate with domestic consumption plus stock requirements. The guaranteed producer price for wheat has remained at the 1988 level of \$533.33 per ton for small producers and \$500 for large producers. This is more than four times the world price. The wheat price is double that of barley (\$266.70/ton), although costs of production of the two crops are similar. To discourage wheat output, the government notified large farmers in late 1992 that they are to reduce wheat acreage, while small producers remain unaffected. The announcement was made too late to substantially reduce planting of the 1993 crop.

Saudi farm subsidies are sensitive to domestic economic conditions, and the wheat subsidies, currently estimated to cost over \$2 billion annually, are expected to decrease as Saudi Arabia acts to reduce its large fiscal deficits. Declining water resources that now irrigate a large part of Saudi agriculture, place limits on the cultivation of wheat and other crops. In the long run, Saudi Arabia is not expected to continue to export wheat at current levels.

### ***Turkey Is the Largest Regional Wheat Trader***

Turkey's 1992 wheat output of 15.7 million tons was an average crop. Guaranteed producer prices are well above world prices, ranging between \$163 and \$188 per ton in 1992. Turkey is expected to import 1 million tons of wheat in 1992/93 as a result of lower domestic purchases and large export commitments. Turkey imports high-quality wheat for blending. Private sector wheat imports were allowed for the first time in 1992/93, as millers and bakers strove to satisfy increasing consumer demand for better-quality bread and pasta products and the government sought ways to meet the wheat requirements of the new Turkic Republics.

Turkey exports red and white wheat and wheat flour to Russia, Iran, Korea, Jordan, and the Turkic states of the FSU. A large share is of low quality, which reduces Turkish competition

with higher-quality U.S., EC, and Canadian wheats. Smaller stocks and lower projected imports will reduce Turkish wheat exports to 2.3 million tons in 1992/93 from the record 6.2 million in 1991/92, when carry-in stocks were at record highs.

Wheat imports were liberalized in late 1992 to permit private sector importation. The private sector has so far imported from the EC, Argentina, and Saudi Arabia, but as of March 1993, not from the United States. Turkey imposes a relatively high import surcharge on flour (\$100/ton), compared to wheat (\$30/ton). Wheat flour exports are encouraged by the elimination of the import surcharge on wheat milled for export.

Turkey's agricultural policy has evolved since the early-1980's, when it was characterized by a structure of incentives biased against agriculture. Since the late-1980's, the farm economy has received large subsidies as politicians sought the support of the rural constituency. This year, there has been intense internal criticism of Turkey's farm subsidization, exemplified by a \$180-per-ton procurement price for wheat in 1992/93, compared to an export price as low as \$102 per ton. Large wheat exports have been forced on the Turkish Grain Marketing Board (TMO) in order to generate revenues to pay farmers high, guaranteed support prices.

### ***Moderate Wheat Import Growth Likely in 1994-98***

Growth in NAME wheat imports is likely to remain near recent levels. Imports are projected to increase 2-3 percent annually in the major importing countries of North Africa, and about 2 percent in the major Middle Eastern importing countries in the 1994-98 period. Declining consumer subsidies and slower population increases will moderate demand growth. Recovery from the Gulf War and the stimulating effects of policy reforms initiated by many countries in the 1980's are expected to support moderate-to-strong income gains during the next 5 years. However, the dietary transition to wheat products associated with past income growth has already been achieved. Thus, income gains are unlikely to stimulate significant future increases in per capita consumption.

As many NAME countries undertake major economic reforms, there has been a shift toward the liberalization of wheat imports, privatization of wheat markets, and reduced input subsidies. Some degree of wheat self-sufficiency remains an important goal of nearly all the region's countries, and producer prices remain above world prices in an effort to maintain profitability and domestic output. Nevertheless, production potential is moderate as yields and area expansion have reached their limits, with the exception of Iran, where the sector is undergoing a recovery. Domestic wheat output will therefore account for a declining share of the region's consumption.

The combined wheat imports of Algeria, Egypt, Morocco, and Tunisia are projected to increase slightly to around 15 million tons in 1998, reflecting increased imports by Algeria, Egypt and Tunisia, but a reduction in Morocco's imports from current drought-related levels (fig. 9). However, if income growth were to fall to one-half the level now anticipated in North Africa, wheat imports would be expected to increase less.

Consumer price policies could have a potentially important effect on wheat import demand. A 5-percent annual increase in the real retail price of wheat, combined with an income growth assumption, would lower projected imports below current levels.

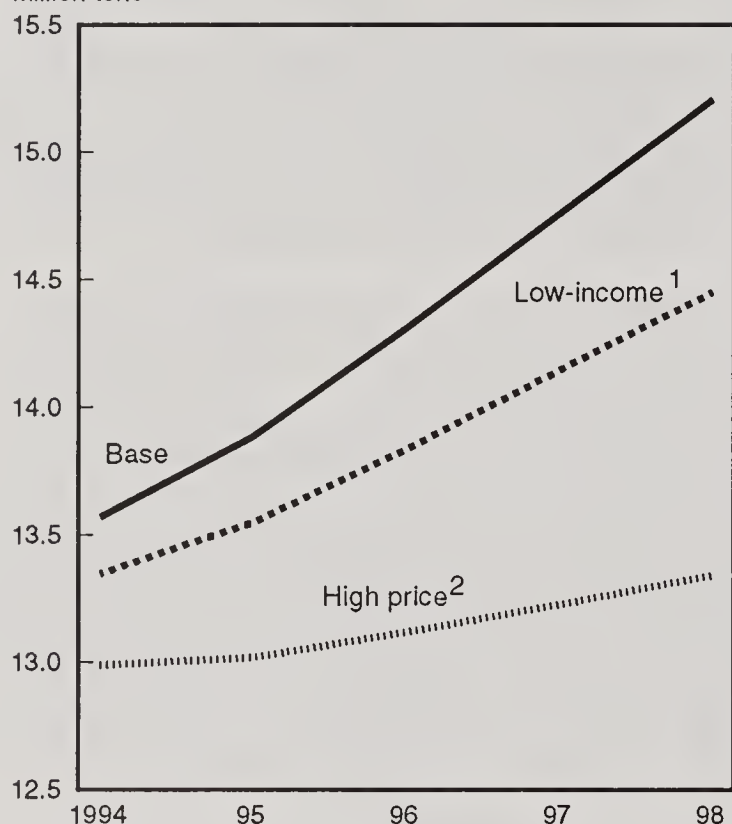
In the Middle East, wheat imports in Iran, Iraq, Israel, Jordan, Turkey, and Yemen are projected to increase to 12.8 million tons in 1998 (fig. 10). Population growth rates that remain

in the 3-percent range, combined with moderate gains in income, will boost regional wheat imports. An assumed resumption of wheat sales to Iraq later in the decade accounts for 2.3 million tons of this increase. Income growth at one-half of the projected rate would reduce Middle Eastern import demand in 1998 to 10.9 million tons. A 5-percent annual increase in real wheat consumer prices, with moderate income growth, would also lower projected imports.

Figure 9

### Projected North African Wheat Imports for Selected Countries, 1994-98

Million tons



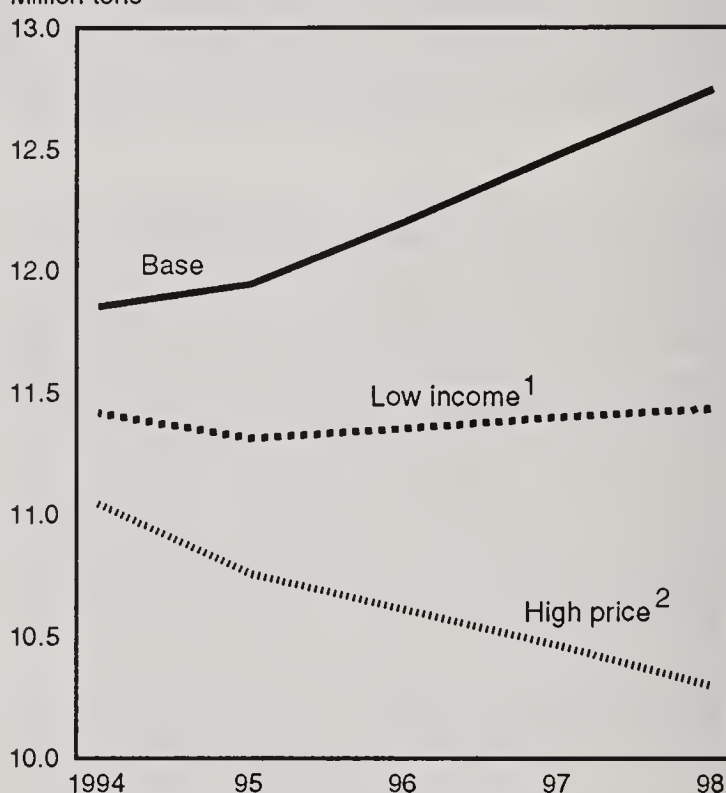
<sup>1</sup> Low-income scenario reduces projected GDP growth by one-half.

<sup>2</sup> Low-income scenario reduces projected GDP growth by one-half.

Figure 10

### Projected Middle East Wheat Imports, 1994-98

Million tons



<sup>1</sup> Low-income scenario reduces projected GDP growth by one-half.

<sup>2</sup> High-price scenario raises real consumer wheat prices 5 percent annually.



## Upward Trend Resumes for NAME Rice Imports

*The strong demand for rice can be attributed to increasing urbanization, improved income distribution, and low consumer prices. The widening gap between production and consumption was filled by imports that nearly doubled between 1980 and 1992. The policy objectives of most countries are to make rice available at a reasonable price, with a steady distribution of a quality product. To facilitate rice importation, many countries have removed tariff and nontariff barriers and eased accessibility to foreign exchange. The United States and Thailand continue to vie for the market. [John Parker and Stacey Rosen]*

### Consumption Greatly Outpaces Production

Per capita rice production in NAME declined more than 50 percent during the 1980's, from 12 kilograms in 1980 to just under 7 in 1988. In the last few years, however, production growth accelerated with yield gains in Egypt and increased area planted in Iran. These two countries account for more than 90 percent of the rice produced in the region, which averages nearly 4 million tons annually.

Per capita consumption remained steady through the 1980's at 20 kilograms and increased to nearly 23 kilograms in 1992. The strong rise in demand can be attributed to urbanization, improved income distribution, and low consumer prices.

### Rapid Growth in Rice Imports

The widening gap between production and consumption has been filled by imports, which nearly doubled between 1980 and 1992 (fig. 11). In 1992, the region's rice imports totaled more than 3.4 million tons and accounted for nearly half of its rice supply (fig. 12). The region's share of global rice imports is about 25 percent.

Excess supply on the world market, particularly in Southeast Asia, has translated into low prices and encouraged exporters to provide government credit programs for importers. As competition among suppliers has intensified, rice import prices have fallen for NAME countries. The average export price for good quality, 4-percent-broken rice in Southeast Asia in April 1993 was about \$210 per ton. Rice prices declined more than one-third over the past 2 years, and are now about one-half the average price of rice imported by Middle Eastern countries during the late 1980's.

Rice has a high priority in the allocation of foreign exchange for imports, which means that most import barriers have been reduced or removed in almost all countries. The exception is Egypt, the only net rice exporter in the region.

The region's rice imports rose half a million tons in 1992. However, with lower prices, the value remained near \$1 billion, well below the 1989 peak of \$1.3 billion.

### U.S. and Thailand Are Major Rice Suppliers

During the 1980's, the United States and Thailand were the region's major rice suppliers. Combined, they provided over half of the region's rice imports in the 1980-85 period. The U.S. share of the region's rice imports fell from 30 percent in 1980, with large sales to Iraq, Saudi Arabia, and the United Arab Emirates (UAE), to 14 percent in 1992, when there were no sales to Iraq (fig. 13).

A conspicuous replacement for U.S. rice in the region has been Thai rice. Thailand became the region's top supplier in 1989, when its deliveries increased 25 percent and surpassed

Figure 11

### Rice: Per Capita Production and Consumption in NAME, 1980-92

Kilograms

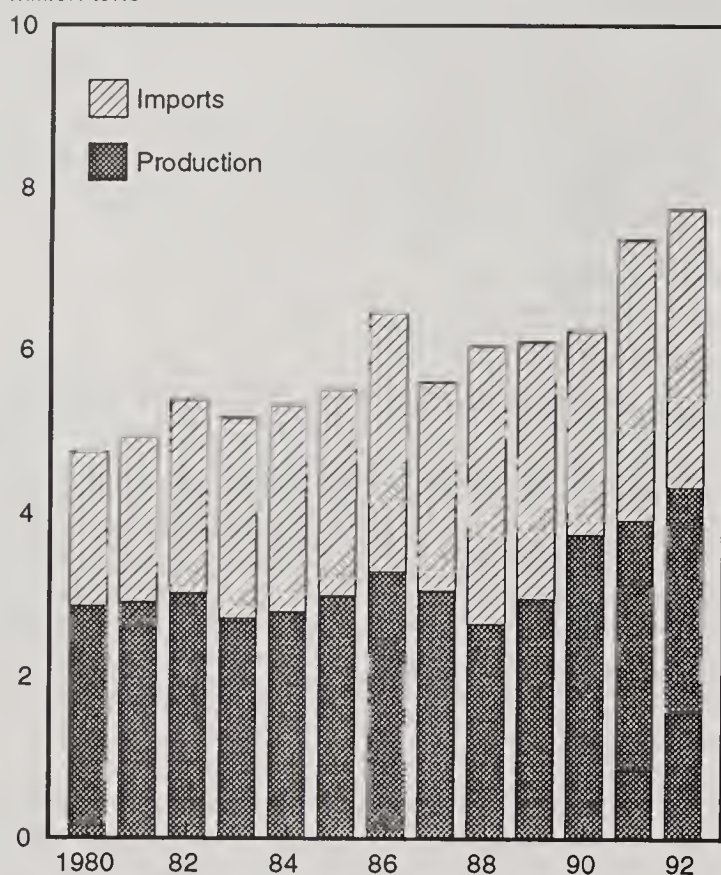




Figure 12

## Rice Components of Consumption in NAME, 1980-92

Million tons



the United States. Its 28-percent share in 1988 rose to 39 percent by 1992, a gain achieved by maintaining market share in Iran and the GCC markets. In addition, Thai rice quality has improved and marketing methods have included meeting the financial and service needs of importers.

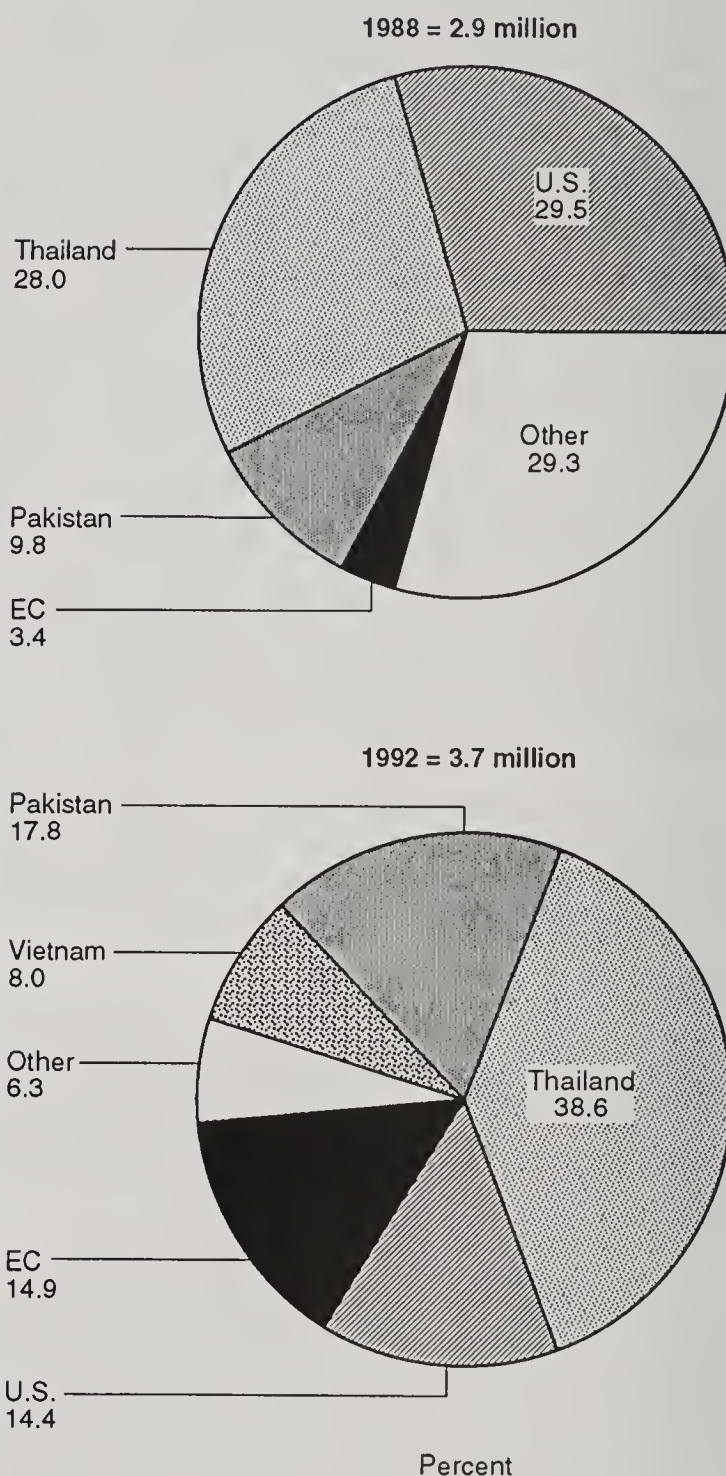
Pakistan and India have recently expanded rice exports to the Middle East. They lowered prices for basmati rice, which had been nearly double the Thai price for long grain rice in the late 1980's. Pakistan also found a good market for some of its varieties in Iran and Iraq, and in 1992 its share of the region's rice imports was nearly 20 percent.

The EC share of regional rice imports has been between 6 and 7 percent in the last 3 years. The EC has used export restitution payments for its rice exports and has at various times been the leading supplier to Libya, Algeria, Syria, Jordan, and Turkey.

Despite low prices offered by Asian competitors, gains for U.S. rice exports to the region are occurring in 1993. In the first third of 1993, U.S. sales to the region were nearly 280,000 tons, more than double the same period last year. This relates to special situations where quality, type of rice, credit, and other factors are more important than price alone. Also, the gap between the U.S. and Bangkok price for certain types of rice has narrowed. EEP will allow Turkey, Jordan, and Algeria to buy U.S. rice at lower prices than would be otherwise possible.

Figure 13

## NAME Rice Suppliers, 1988 and 1992

**Import Policy Changes Ease Rice Imports**

The primary policy objective for most countries in the region is to make a steady supply of high-quality rice available to consumers at a reasonable price. To facilitate rice imports, many countries have changed policies by removing tariff and nontariff barriers and easing access to foreign exchange to private-sector importers. Iraq changed its policy during the early 1980's, from restricting imports to protect domestic producers, to boosting imports to reduce shortages. In 1989, Iran permitted private importers to sell rice on the open market as a supplement to rice sold by the government to ration card holders.



Egypt is an exception to these policies. Clinging to past policies that were developed when the country had a smaller population, a surplus of rice, and large rice exports, Egypt has retained its ban on rice imports. The ban now has a new policy role. Because government controls on rice marketing were removed in 1991, the ban on imports is viewed as a mechanism to bolster the domestic farm price. A surprising growth in rice yields was triggered when government controls ended. Per capita consumption had declined from a high of 36 kilos in 1975 to a low of 22 kilos in 1988, but by 1992, it had peaked again. Also, Egypt's rice exports rose 30 percent in 1992 to 209,000 tons.

### ***Rice Import Demand To Increase***

The major factors that will determine rice import demand by the NAME region during the 1994-98 period are population growth, production, global rice prices, per capita income, marketing methods, relative prices of other foods, and changes in stocks.

Most of the growth in NAME rice production will be in Egypt, and thus will not depress import demand. Output may rebound slightly in Iran and Iraq, but not enough to greatly erode imports.

A strong rise in import demand is expected over the next 5 years, because of the following factors:

- The combination of increasing population, rising per capita income in most countries, urbanization, and improved income distribution is bolstering growth in rice demand.
- Rice import barriers have been reduced or eliminated by most countries.
- More efficient marketing methods have streamlined retail rice distribution and the large number of competitive grocery marketing systems has led to lower consumer prices, which has stimulated demand.
- Consumers are responsive to the lower prices offered by major exporters. Prices are so low that consumer demand is rising without government subsidies.
- Export programs and credit from major exporters have enabled some countries to increase rice imports even in times of serious financial shortages. For example, credit programs recently served as a catalyst for larger rice imports by Jordan, and Algeria.

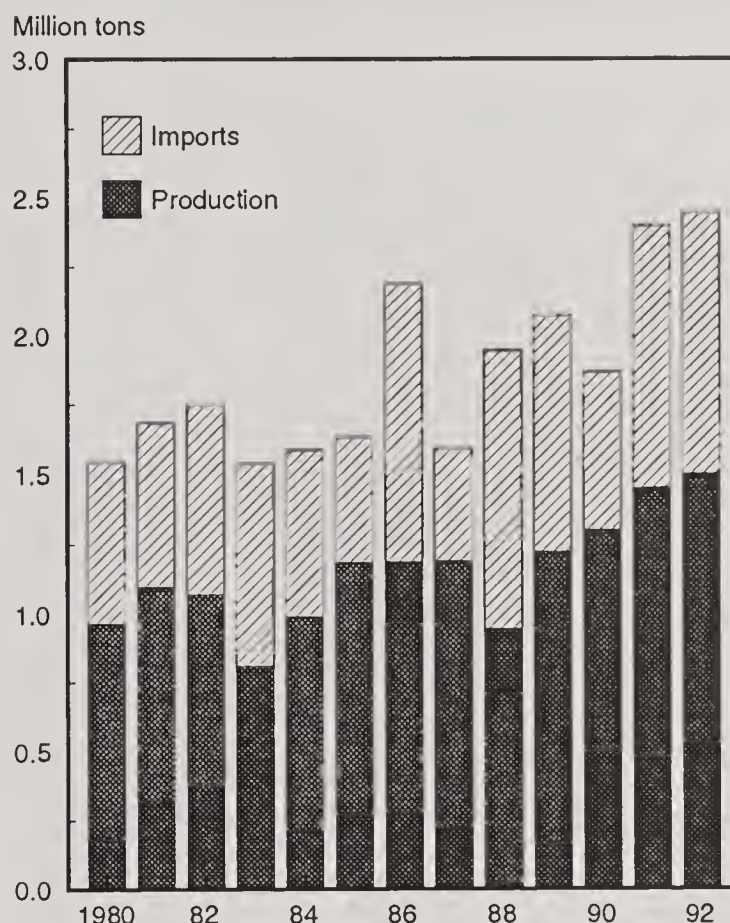
### ***Trends and Prospects in Specific Markets***

#### **Iran's Rice Imports Rising**

Iran is the region's leading rice importer, averaging more than 800,000 tons annually from 1990 to 1992. Imports account for 40 percent of Iran's rice supply (fig. 14). Recent policies, which encourage private trade and aim at increasing the supply of consumer goods to control inflation, have paved the way for larger rice imports, possibly near 1 million tons in 1993. Current production is about 50 percent greater than that of the late 1980's. The larger supplies have led to lower retail

Figure 14

#### **Iran: Components of Rice Consumption, 1980-92**



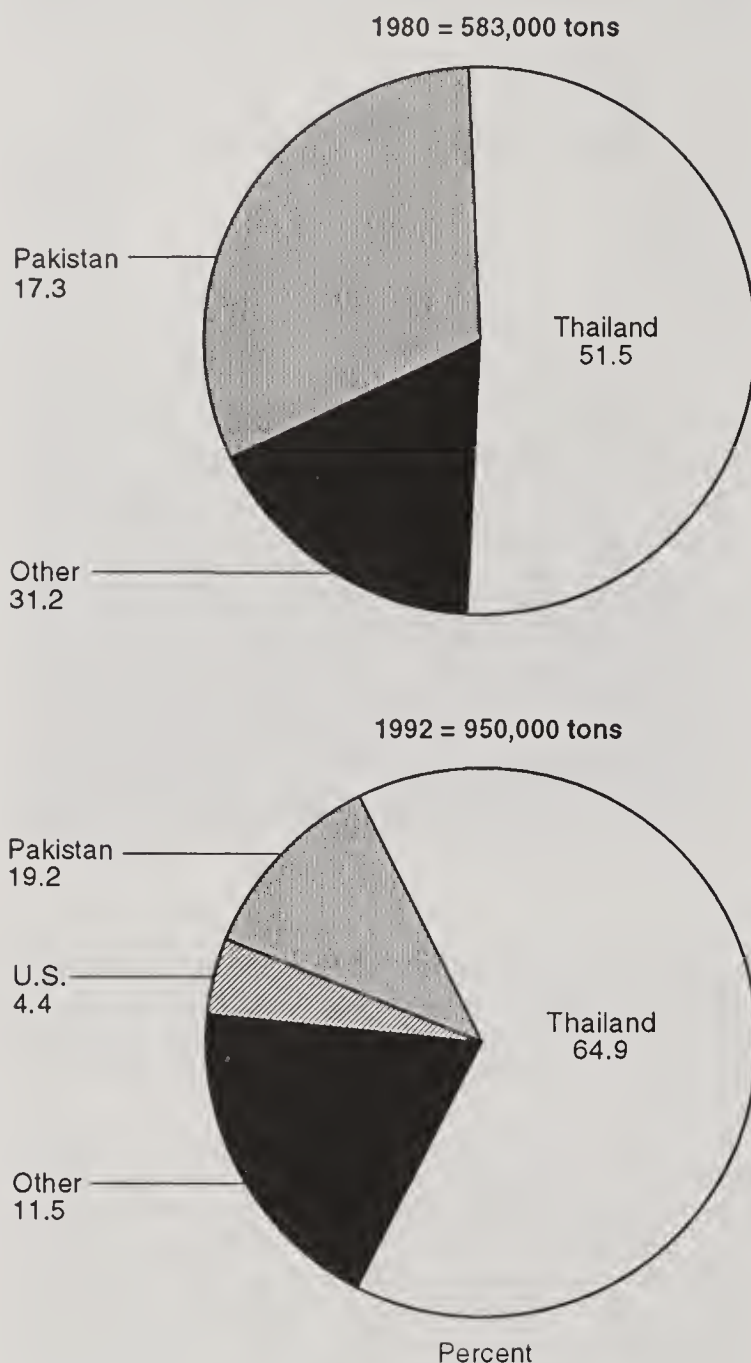
prices that have benefitted consumers, who have suffered from a decade of inflation and varying degrees of rationing. In addition, per capita consumption, which fell from a peak of 42 kilograms in 1982 to 35 kilograms in 1990, had rebounded by 1992.

In 1992, Thailand supplied 65 percent of Iran's rice imports. Pakistan supplied 19 percent and the United States, 4 percent. U.S. rice exports to Iran may double in 1993. In addition to relatively attractive prices and the preferred quality characteristics of U.S. rice, recent government policies have eased Iranian travel restrictions, allowing travel to the United States to purchase rice and other commodities (fig. 15).

Projections of Iran's rice imports vary considerably. Per capita use has largely rebounded from the 1980-88 war years, but high population and income growth will continue to boost import demand. In addition, stocks are low and will be replenished and increased. With relatively low prices, Iran's 1993 rice imports are running ahead of 1992 purchases and are likely to exceed the 1-million ton mark. Already, large purchases have been made from Thailand and Vietnam. In the first third of 1993, U.S. shipments totaled 42,447 tons, while none was shipped during the same period in 1992. By 1998, rice imports are likely to be one-third more than the 1992 level.



Figure 15  
Iran's Rice Suppliers, 1980 and 1992



#### Iraq's Rice Imports Recover

In 1992, Iraq imported about 500,000 tons of rice, nearly double the 1991 level. Despite foreign exchange difficulties, Iraq has been able to pay for imported rice through barter trade of phosphates and used equipment with Asia. The Iraq grain board controls rice imports and distributes supplies to retail outlets for sale at fixed prices. Before inflation became rampant in late 1990, domestic rice prices were set close to the import cost. But in 1992, an increase in the import price resulted in a net loss for the grain board.

Historically, the United States has been Iraq's largest rice supplier, with more than an 80-percent share of the market. Currently, Thailand is the largest supplier, followed by Vietnam, India, and Pakistan.

Iraq's 1992 rice imports were considerably greater than forecast. Despite the lack of foreign exchange, Iraq has been able to use the world rice surplus to its advantage. While projections for Iraqi rice imports for the next few years are difficult to make because of the current political situation, under certain assumptions (such as population growth and low world prices) it is likely that imports will exceed 600,000 tons by 1998, even if local output rebounds.

#### Saudi Arabia's Rice Imports Driven by Population Growth

Saudi Arabia imported 520,000 tons of rice in 1992, a decline from record imports of 625,000 tons in 1991. Saudi Arabia imports rice from Thailand, the United States, and India. Each of these suppliers holds about a 30-percent share of the Saudi market (fig. 16).

In a very competitive environment, U.S. rice exporters have shown some sales innovations. A joint venture between a U.S. rice exporter and Saudi food marketers led to the construction of a rice polishing and bagging plant in Jeddah's harbor. This helped U.S. rice to meet all Saudi regulations on Arabic labelling, shelf life, and quality, and helped maintain the U.S. market share.

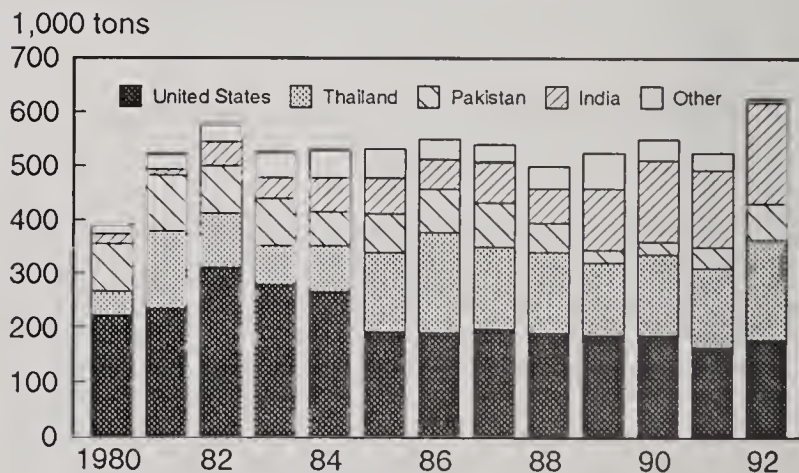
Saudi Arabia's rice imports are handled primarily by private traders who are likely to build stocks in 1993 while prices are low. Large warehouses, built with government subsidies, have increased capacity for stockholding.

Saudi Arabia is a mature market, and per capita consumption of rice through the 1990's is likely to remain at the current level of 33 kilograms. Because Saudi Arabia does not produce rice, imports are projected to increase to about 700,000 tons by 1998, mainly because of population growth. Future demand could accelerate if there is a significant increase in the number of expatriate workers from countries that have a high per capita rice consumption, such as South Asia and Egypt.

#### Turkey's Rice Imports Rising

Rising per capita consumption during the last decade, coupled with a downward trend in production, caused Turkish rice

Figure 16  
Saudi Arabia's Rice Suppliers, 1980-92



imports to rise rapidly to about 250,000 tons. U.S. rice exports to Turkey more than doubled in 1992 to a record 181,000 tons. The EC was Turkey's major supplier during 1985-87, when export restitutions spurred deliveries of Italian and Spanish rice. However, EC rice exports to Turkey declined to 24,000 tons by 1990. As EC shipments dwindled, Australia increased its exports and currently holds more than a 10-percent share of the market. Thailand and Pakistan have been intermittent suppliers.

Turkey is likely to continue as one of the expanding rice importers. Optimizing the use of irrigated land has resulted in a shift to more lucrative crops, especially as the world rice price is below domestic production costs. Per capita use of rice is currently low, but will increase with continued trade liberalization and the availability of relatively inexpensive imported rice. Rice imports by 1998 are projected to reach 300,000 tons.

### Yemen Is Fast Growing Rice Market

Yemen has been one of the world's fastest growing rice importers, with imports of nearly 200,000 tons in 1992, double the 1985-87 average. Thailand supplies nearly all of Yemen's rice imports.

Yemen's rice imports are likely to stabilize near present levels through 1998. Petroleum export revenues are rising, but economic growth is not expected to keep pace with the 3-percent annual increase in population. Offsetting the effects of declining per capita incomes on import demand is a shift in trade policy favoring rice imports. The average Yemeni diet currently contains about one-third fewer calories than is considered adequate. Per capita rice consumption in 1992 was only a fifth that of neighboring Gulf sheikdoms.

### Consumption High in the United Arab Emirates

The UAE ranks fifth among rice importers in the region, with imports averaging about 250,000 tons annually. The importance of Dubai as a transit center has now lessened, as importing countries deal directly with exporters. Thailand is the leading supplier, at nearly 200,000 tons annually. Pakistan is usually second, shipping about 50,000 tons annually.

Per capita rice consumption in the UAE exceeds 100 kilograms, as compared with the United States at 7.7 kilos. The basis for this high intake, nearly triple that of neighboring

Iran or Iraq, includes low, subsidized, consumer prices and demographic characteristics, e.g., the UAE employs a large number of workers from Asia whose diet includes a large portion of rice.

### Rice Imports Increasing in Other NAME Countries

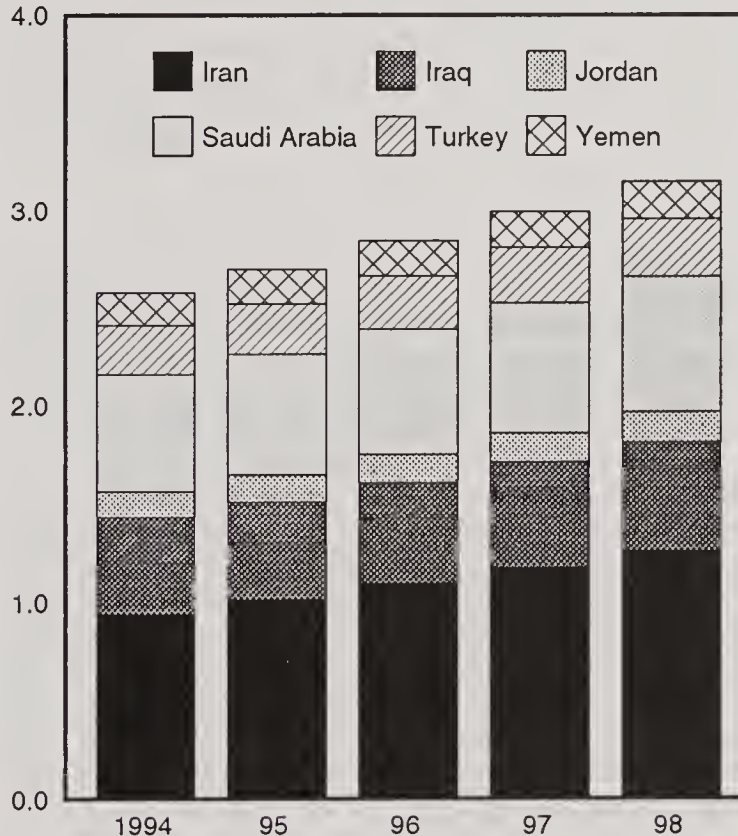
Jordan's rice imports, which nearly doubled during the past 5 years, are likely to rise to about 150,000 tons by 1998 as a result of strong growth in per capita income and a 4-percent annual increase in population. Another growth market with low per capita use is Algeria, where 1993 rice imports are projected to be 25 percent greater than in 1992. While Morocco may strive to grow more rice, its imports will fluctuate with its domestic output. A combination of income and population growth are expected to raise rice import demand by Syria and Libya through 1998 (fig. 17).

Figure 17

### Projected Rice Imports of Selected NAME Countries, 1994-1998 1/

1,000 tons

4.0



1/ The selected countries comprise 75 percent of the NAME rice import market.



## Corn Demand Driven by Poultry Trends

*Corn demand in the NAME region is determined mainly by trends in the poultry sector, which consumes most of the imported corn. Regional corn output is primarily confined to Egypt and Turkey, with little production in the major consuming countries, Iran, Saudi Arabia, and Algeria. Demand for poultry and livestock and, in turn, for corn grew steadily in the 1980's, as countries sought to raise the protein content in their population's diets. Slower growth rates are anticipated for poultry output in the 1990's because many countries have removed producer supports. This is likely to lead to slower growth in corn imports. [Mary Burfisher and Michael E. Kurtzig]*

Corn production in NAME rose steadily from 1980-92 but failed to keep pace with the strong growth in demand, particularly in the 1980's (fig. 18). In most countries, corn demand was stimulated during the 1980's by government policies that subsidized the production of meats, especially poultry. Very little corn production occurs in the major consuming countries, including Iran, Saudi Arabia, and Algeria. The exceptions are Turkey and Egypt, where output is substantial. As regional demand for feeds increased, North Africa's corn imports nearly doubled from 1.6 million to 3.1 million tons from 1980 to 1989, and in the Middle East, imports soared from 1.5 to 4.3 million tons.

Since the late-1980's, policy reforms adopted by some countries in the region have led to reduced subsidies for feeds and other inputs. Slowed economic growth, foreign exchange constraints in some countries, the loss of the Iraq import market, and rising corn output in Egypt and Syria also contributed to a decline in NAME corn imports in 1989 and 1990.

Although NAME corn imports remain below the levels of the late 1980's, regional corn demand is starting to recover as a result of several factors. Policy reforms that initially resulted in sharply higher input costs and caused small and inefficient producers to cease production, are now resulting in gains in the efficiency and output of remaining producers. Income growth in some countries, and a recovery of economic activity following the Iran-Iraq and Gulf Wars, are responsible for a rise in feed use. In Morocco, two consecutive droughts have boosted import requirements.

Corn production in 1992/93 declined 1 percent in North Africa to 4.7 million tons (table 7) and imports rose to 3 million tons. In 1992/93, Middle East corn output rose 4.2 percent to 2.7 million tons, accounting for a slight decline in imports to 3.1 million tons.

The U.S. dominates the regional corn-import market, but faces increased competition from Argentina, France, and some East European suppliers. The value of U.S. corn exports to North Africa has declined sharply since 1990 (fig. 19). Most of the decline occurred in Algeria. Although Algeria's corn imports rose in 1992/93, France gained a share of the market, which had been held entirely by the United States in 1990/91 and

1991/92. U.S. corn sales to Egypt declined because of the contraction in the Egyptian poultry and livestock sectors.

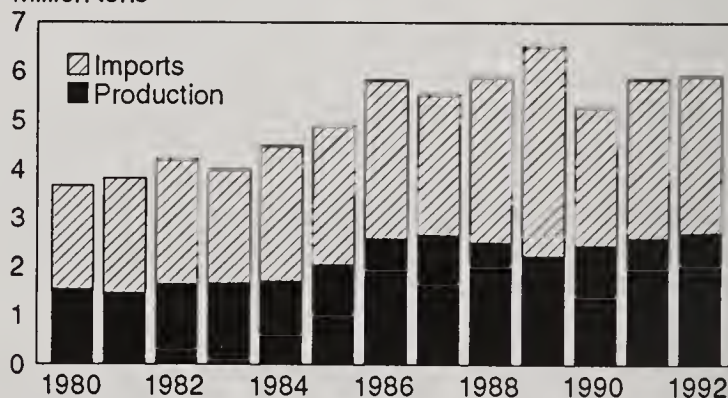
The volume of U.S. corn sales to the Middle East declined 20 percent between 1990 and 1991, but leveled off between 1991 and 1992. The decline in 1991 was mostly because of the loss of the Iraqi market, previously the second largest U.S. corn market in the Middle East. In 1992, U.S. sales to Saudi Arabia fell 30 percent to one-half million tons, offsetting expanding sales to most other Middle Eastern countries. In Saudi Arabia, the United States lost share in a growing market because of Argentine competition.

Figure 18

### NAME Corn Production and Imports

#### Middle East

Million tons



#### North Africa

Million tons

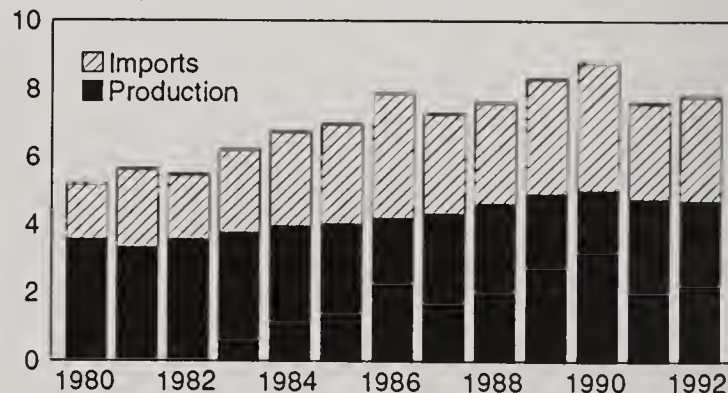




Table 7--Corn: Production, imports, and exports from the U.S. to selected NAME countries, 1992 1/

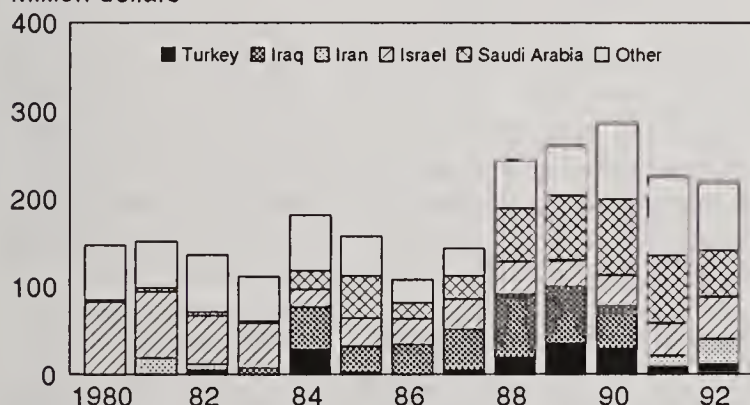
Country	Production	Imports 1992/93	U.S. exports 1992
1,000 tons			
Middle East	2,702	3,100	2,067
Iran	55	900	278
Iraq	100	0	0
Israel	0	550	462
Jordan	1	300	249
Lebanon	2	100	120
Saudi Arabia	4	900	497
Syria	290	100	95
Turkey	2,200	100	109
UAE	0	0	38
Yemen	50	150	139
North Africa	4,719	3,025	2,298
Algeria	2	1,100	946
Egypt	4,500	1,300	1,019
Morocco	216	300	161

1/ Production and imports on marketing-year basis.  
Imports from U.S. reported for calendar year.  
Sources: USDA, FAS, PS&D database, April 1993;  
USDA, FATUS.

Figure 19  
U.S. Corn Exports in NAME

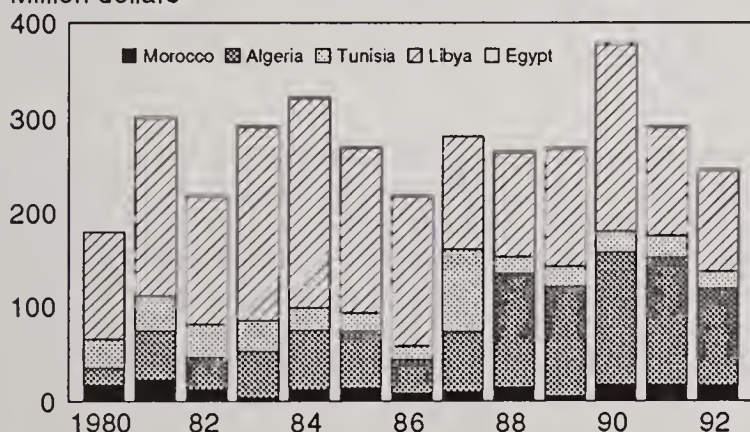
#### Middle East

Million dollars



#### North Africa

Million dollars



### Egypt's Corn Import Demand Slows

Egypt is the region's leading corn producer. Output in 1992 was a near-record 4.5 million tons, primarily because of incentives for livestock and dairy production, the removal of the corn import subsidy, and restricted meat and dairy imports. These factors made corn a profitable crop. Most domestic corn is used on farm as livestock feed, and only a small portion is marketed. Most Egyptian corn is a white variety that is not suited for broiler feed, although more Egyptian farmers are shifting to hybrid yellow-corn varieties. Large commercial poultry and livestock producers still rely mostly on imported corn to meet feed requirements. Of the 1992 corn crop, approximately 1 million tons went for human consumption, 1 million tons of yellow corn for poultry feed, and the rest for cattle and sheep feed.

The Egyptian Government has greatly reduced its intervention in the corn sector as part of the economywide market reforms it initiated in the late 1980's. Feed subsidies were reduced beginning in 1988. In 1990, importation of corn was officially privatized, although this was not actually implemented until late 1991. Initially, the Egyptian Government continued to import corn for public as well as private users, but in January 1992, the government eliminated its importing role. In June 1992, price controls on animal feed were removed. The liberalization of corn imports has not been supported by the producers and feedlot operators who benefitted from the feed subsidy.

In 1992, several factors led to a decline in Egyptian demand for corn. Adverse, economywide developments that diminished consumer purchasing power and resulted in real increases in meat, milk, and egg prices compounded the effect of higher feed prices in reducing poultry output. Weak demand became even more pronounced in late-1992 and in early-1993, as tourism declined sharply because of terrorist threats. This situation has adversely affected the incomes of 1 million high-income Egyptians who work in the tourist industry and who tend to consume higher-priced foods. In addition, there was some shift by public sector feed mills from corn to bran and soymeal for feed ingredients. Despite the shutdown of the National Buffalo Project, beef output and feed demand has remained steady.

Egypt's corn imports have fallen 36 percent since 1986/87, when farm policy reforms began, to 1.3 million tons in 1992/93. The United States is Egypt's main corn supplier, competing with Argentina, Uruguay, and recently East European countries. However, competition is somewhat irregular. U.S. exports to Egypt fell 5 percent in 1992 to 1.1 million tons. Egyptian purchases were made under two U.S. export programs, the Commodity Import Program (CIP) and GSM. In 1992, the United States Agency for International Development provided \$7 million for corn exports through its CIP, and USDA's GSM-102 credit guarantee program was reinstituted for corn imports by the private sector in 1992. GSM credit had been curtailed when Egypt fell into payment arrears. In 1992, the program accounted for \$20 million. In 1993, the CIP program may provide up to \$40 million for corn imports, and \$5.5 million is available under the GSM-102 program.



There is certain potential for increased corn importation in the Egyptian market. With domestic poultry production still quite weak and buffalo/cattle feeding off, the situation can only get better for this sector of the agricultural economy. While commercial milk production is still a nascent industry, some growth in corn imports could materialize here as well. One existing drawback which works against greater local livestock and poultry production is the August 1992 repeal of the ban on imports of frozen beef and slaughter cattle. Recently, Egypt has become a dumping ground for heavily subsidized EC beef and cattle.

### ***Algerian Corn Imports Begin Recovery***

Algeria is the second largest corn importer in NAME, following Egypt. In 1992/93, Algeria imported 1.1 million tons, nearly 20 percent of the region's total corn imports. Algerian imports are closely correlated with developments in its poultry sector, which utilizes over 90 percent of the imported corn. In the early 1980's, imports were spurred on by the government's policy to promote poultry self-sufficiency. Large feed subsidies and import controls on poultry meat imports resulted in a doubling of poultry meat output from 1980 to 1989. Simultaneously, corn imports rose from 200,000 tons to a peak of 1.5 million tons.

Since 1989, the elimination of feed subsidies and a devaluation of the Algerian dinar caused feed prices to double, thereby reducing growth in the poultry sector to about 1 percent annually. A combination of weaker demand from the poultry sector and insufficient foreign exchange caused corn imports to fall 25 percent in 1991/92 to 950,000 tons. A slow recovery has begun, as the sector undergoes consolidation, supporting a small increase in 1992/93 corn imports. The Algerian Government is continuing to promote poultry self-sufficiency and has targeted a 50-percent increase in per capita poultry consumption.

GSM credit has been essential in maintaining effective import demand for U.S. corn, despite Algeria's foreign exchange constraints. In late 1992, EC restitution and French COFACE programs re-entered the Algerian market. France sold 75,000 tons in late-1992 and may supply 100,000 tons in 1993, about 10 percent of the market.

### ***Steady Growth in Saudi Corn Imports***

Saudi Arabia's poultry industry and small dairy sector rely almost entirely on imported corn, with the broiler industry consuming most. The small amount of corn produced is used for snack foods or consumed on the cob. The Saudi Government has encouraged the growth of its poultry and livestock sectors with feed and other input subsidies. Currently, the corn import subsidy is \$53.33 per ton. Expansion of the poultry sector, in particular, has supported steady growth in corn imports, which reached 900,000 tons in 1992/93.

Corn is imported mostly by the large poultry and livestock producers, as well as by feed millers. Large poultry and livestock producers have their own feed mills and produce feed for their own use and also for sale. Imports are likely to increase as the country's two largest poultry producers proceed with expansion plans.

In 1992, U.S. corn exports to Saudi Arabia totaled 497,000 tons. Although this figure was 30 percent below the previous year, the United States continues to be the major corn exporter to the Saudi market. The U.S. market share declined in 1992 because of increased competition from Argentina and China.

### ***Turkey's Corn Production Rising Slowly as Poultry Output Expands***

Turkey is the region's second largest corn producer, after Egypt. Corn area has expanded slowly, with annual production approximating 80 percent of total consumption. Corn consumption is influenced in large part by the availability of domestic barley and more, recently, by sorghum imports from the United States. Both domestic and imported corn are used largely for poultry feed.

Corn imports in the near term are forecast to be small. Most significantly, imports from the United States are expected to decline as private-sector importers access lower-priced regional supplies, for example Bulgarian corn. While U.S. corn is preferred by private traders, it is often difficult for small importers to handle the large shipments preferred by U.S. exporters. Corn from Bulgaria and Argentina replaced U.S. corn in 1992. The Turkish Grain Board continues to have an advantage over private importers because it does not have to pay the \$30-per-ton import surcharge. However, private-sector imports of corn and sorghum have increased, reducing the government's import role. The interest in sorghum is related to avoiding the corn surcharge, although a 3-percent customs duty became effective in January 1993. Because the duty is on both sorghum and corn, sorghum will be preferred as long as the surcharge remains.

Turkey's poultry and dairy sectors continue to expand and, with it, the demand for feedstuffs. With the slow expansion of domestic corn output, and the potential for relatively cheap corn available on the world market, imports are likely to increase in years of limited output, but they are unlikely to be substantial in the near term. GSM credit continues to be available for public and private sector corn imports.

### ***Iran Reverts To U.S. Corn***

Iran is a major consumer of feed corn. Domestic production has never been large, despite efforts to increase it in the late 1970's. Estimated at 60,000 tons, domestic corn plays a minor role in the feeding of Iran's livestock. Consequently, imports are essential and have averaged near 900,000 tons in the last 5 years.

Demand for corn is expected to increase as the government attempts to revive sagging livestock output. Per capita consumption declined during the 1980's, as a consequence of the dislocation during the Iran-Iraq war. More recently, the Iranian Government has supported the development of the poultry and livestock sectors with subsidized feed grain imports, guaranteed producer prices, import controls, improved access to foreign exchange for importers, and increased private sector trading. Reforms in 1990 reduced the role of the Government Trading Company (GTC), which dominated corn imports in the 1980's. Associations of feedlot managers and cooperatives are now able to import corn from any source.

Iran's trade policy shifted in early 1991 from avoiding U.S. grain purchases to resuming imports from the United States. As a result, U.S. corn exports to Iran for the first half of fiscal 1993 have already reached 444,000 tons, compared with 209,600 tons in fiscal 1992. China emerged as the second major supplier, while Argentina dropped to third place.

Argentina's corn sales to Iran peaked at 799,000 tons in 1990 but fell about a third in 1991 and fell again in 1992. Delayed payments caused Argentina to shift to other markets such as Saudi Arabia and Egypt. Iran, therefore, sought new suppliers, which opened the market for the United States and China.

Demand for feed grains will continue to rise as Iran's poultry sector recovers from the war's impact and other livestock enterprises such as dairy and beef expand. Poultry meat output, which stagnated through 1987, increased from 266,000 tons in 1988 to an estimated 430,000 tons in 1992.

#### ***Corn Import Demand Rises in Israel, Jordan, and Morocco***

Israel's resource constraints and climate dictate that it import livestock feeds rather than produce them. Domestic corn output for feed is negligible, but output for corn on the cob was estimated at 117,000 tons in 1990. Two out of three tons of feed grains are imported from the United States, as part of the Israeli Government's commitment to import at least 1.6 million tons of American bulk food and feed grains annually. The amount of corn imported varies as relative prices of feeds shift, leading to varying feed composition among corn, corn grits, feed wheat, tapioca, sorghum, barley, and oil cake. In 1992/93, Israel's corn imports rose 16 percent to a record 550,000 tons, nearly all from the United States. Most corn is consumed in the large poultry sector and some in the dairy industry.

In Jordan, corn production is marginal and mostly for human consumption. Import demand is reviving as Jordan's economy recovers from the effects of the Gulf War. New poultry farms have recently been established and exports of poultry meat and eggs to Iraq have increased. As a result, corn consumption has more than doubled in the last 5 years. Jordan imports most of its corn from the United States, 250,000 tons in 1992, with Argentina supplying the rest. The United States is expected to continue to dominate the market for corn

through GSM credit. Financing will continue to be an important factor in Jordan's purchasing decisions because of limited foreign exchange.

In late 1989, sorghum was introduced to Jordan, and U.S. shipments in 1989 and 1990 averaged close to 200,000 tons. However, within the last 2 years they have fallen to 70,000 tons, but corn shipments have remained strong throughout.

Two consecutive years of drought in Morocco in 1992 and 1993 are expected to lead to record imports of corn and other grains. Corn imports in 1992/93 are estimated at 300,000 tons. The government has taken steps to ensure adequate feed supplies for the livestock sector, including a \$30-million program to distribute subsidized feeds and a reduction in feed import tariffs.

#### ***Future Corn Consumption Determined by Expansion in Poultry Output***

Corn import demand in NAME is determined mainly by trends in the poultry sector, which consumes most of the corn imported by the region. Slower growth rates are anticipated for poultry production in the mid-1990's, as many countries remove producer support and markets in some countries mature. This will lead to slowed growth in corn imports during the 1990's, compared to the 1980's.

In Egypt, corn imports are expected to increase as its poultry sector emerges from a consolidation period following recent agricultural policy reforms. Per capita income is expected to become positive in the mid-1990's following the implementation of Egypt's comprehensive, economywide policy-reform package. This will help restore growth in consumer demand for poultry and other meats.

Algeria's poultry sector is also expected to continue its slow recovery, following policy reforms implemented since 1989. However, corn import demand will be vulnerable to the country's financial import capacity, however. In Iran, imports are forecast to rise due to a combination of rising incomes and a government commitment to increase domestic food production. Saudi corn- import demand should rise slowly as poultry production capacity is expected to increase slightly, as per capita meat consumption is already high and unlikely to increase much further.



# Poultry Sector Leads Meat Production

*Poultry accounted for nearly half of NAME meat intake in 1992.*

*Demand is linked closely to income and changing consumer tastes resulting from increased urbanization. Self-sufficiency is high, but it stagnated in 1992 for the fourth year in a row in 1992, as the industry continued to adjust to higher feed prices resulting from market reforms.*  
[Linda Scott]

Poultry, including chicken, turkey, and duck, is the most widely produced meat in the NAME region, accounting for 51 percent of total 1992 meat output. Between 1980 and 1992 the region's poultry self-sufficiency increased rapidly as domestic production nearly doubled (table 8). Aggressive government production incentives, including feed subsidies and reduced interest rates for capital equipment, were largely responsible for the increase. These incentives were designed to reduce import dependence and to supply an inexpensive source of protein for growing, and increasingly urban, populations.

Nearly 65 percent of total output in the region is accounted for by five large producers: Algeria, Egypt, Iran, Saudi Arabia, and Turkey (fig. 20). Although Iraq accounted for more than 15 percent of the Middle East's 1989 total, output has been severely eroded as a result of the Gulf War. Poultry production in the region is increasingly modern and capital intensive, with most producers highly dependent on imported feed ingredients, equipment, and veterinary products. In 1992, the region imported 8.5 million tons of corn and soy-meal, an increase of 94 percent since 1980. Because few countries in the region are major producers of feed ingredients (see Corn and Oilseeds sections in this report), virtually all imports of these two commodities are used as animal feed.

In many countries, the poultry industry consumes as much as 75 percent of corn imports.

The industry's dependence on imported inputs has greatly increased its vulnerability to external shocks. Rapid income growth, strong government support, and overvalued exchange rates increased output dramatically between 1980 and 1985. Since 1986, however, declining economic growth, internal policy changes, and the inability of many countries to adequately finance feed imports under increased foreign exchange constraints, have slowed output considerably. Annual growth rates have declined in many countries (table 9). With the exception of Saudi Arabia, where government support remains strong, the region's poultry producers are facing a radically different policy environment as governments implement widescale economic liberalization.

Of all the reforms enacted under liberalization, the reduction and removal of feed subsidies has had the most significant impact on the poultry industry. Algeria, Egypt, and Tunisia have completely eliminated subsidies, while Iran has moved slowly toward reduced government support. With feed costs accounting for as much as 70 percent of total production costs for a typical commercial poultry producer, the elimination of subsidies has forced many producers out of business. Although this may strengthen the sector over the long term by

Table 8--North Africa and the Middle East: Poultry meat indicators

Year	Production	Imports 1/	Consumption	Ending stocks	Self-sufficiency ratio 2/	Population	Per capita consumption
	-----1,000 tons-----				Percent	Million	Kilograms
1980	1,031	436	1,428	30	72.2	227.5	6.3
1981	1,151	634	1,745	36	66.0	234.8	7.4
1982	1,359	564	1,907	27	71.3	242.1	7.9
1983	1,508	612	2,098	36	71.9	249.2	8.4
1984	1,688	608	2,271	47	74.3	256.7	8.8
1985	1,790	517	2,290	44	78.1	264.2	8.7
1986	1,863	467	2,312	46	80.6	273.7	8.4
1987	2,079	500	2,520	88	82.5	281.5	9.0
1988	2,249	398	2,670	47	84.2	289.7	9.2
1989	2,223	369	2,563	68	86.7	298.1	8.6
1990	2,260	341	2,555	92	88.5	306.4	8.3
1991	2,220	388	2,563	118	86.6	312.3	8.2
1992	2,399	407	2,785	120	86.1	321.6	8.7

1/ 1992 - ERS estimate.

2/ Production/consumption.

Sources: USDA, FAS, *World Poultry Situation*, Circular Series: FL&P 1-93, January 1993; FAO, Agrostat database.

eliminating marginal producers, in the short term, output has stagnated under sharply increased input costs.

### Poultry Consumption on the Rise

Poultry is the preferred meat in much of the NAME region. In 1992 poultry consumption accounted for 42 percent of the 20-kilogram per capita intake of meat products (fig. 21). As with all animal products, poultry demand is linked closely to income growth and changing consumer tastes that have resulted from increased urbanization. During the 1988-92 pe-

riod, the region's high-income, urbanized countries, Bahrain, Israel, and Qatar, were the largest per capita poultry consumers, exceeding 26 kilos in 1991 (table 10). Intake was smaller in the region's low- and middle-income countries, which also had the lowest urbanization rates.

Since 1988, the NAME region has experienced declining per capita poultry intake as a result of reduced consumer purchasing power and stagnant domestic output, although consumption began to rise again in 1992 (fig. 22). Retail prices have

Figure 20

### NAME Poultry Meat Production, 1988-92 Average

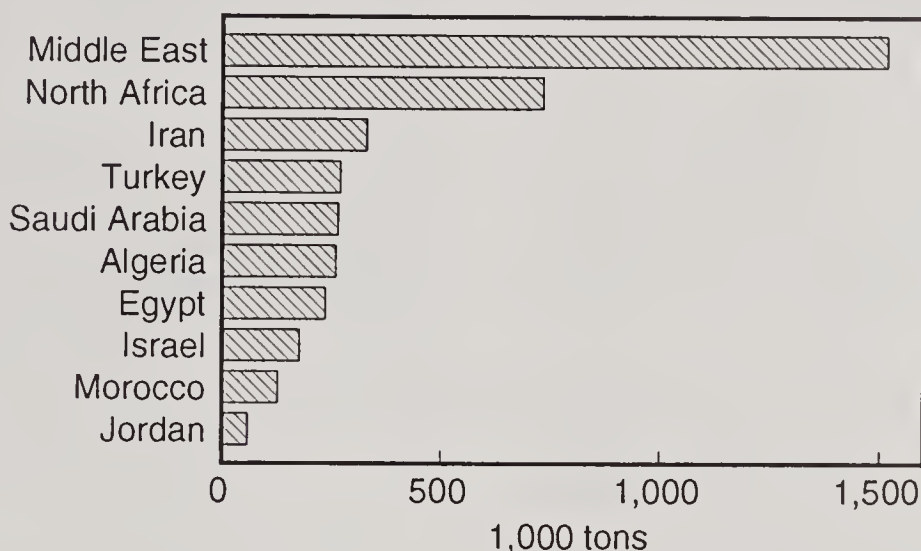


Table 9--Growth rates in NAME poultry meat markets, 1980-92

Country/region	Production			Imports			Consumption		
	1980-85	1986-92	1980-92	1980-85	1986-92	1980-92	1980-85	1986-92	1980-92
Percent									
Middle East	11.05	5.60	6.58	2.36	-0.91	-2.15	8.86	4.61	4.21
Bahrain	5.75	5.75	-0.95	13.60	15.59	12.36	11.05	13.66	9.01
Cyprus	5.25	7.66	7.09	---	---	---	5.25	7.66	7.09
Iran	2.99	10.85	5.40	40.30	---	---	5.80	7.90	3.87
Iraq	25.10	-21.89	1.15	-8.11	---	---	17.15	-23.71	-5.73
Israel	4.05	4.78	1.73	---	---	---	6.48	4.32	1.58
Jordan	14.98	1.79	7.99	-12.22	30.64	9.08	12.82	4.58	8.28
Kuwait	6.11	-14.94	-4.29	-2.76	-2.11	-6.41	0.11	-5.23	-2.34
Lebanon	2.02	0.00	0.72	-8.62	18.09	4.54	1.68	0.86	0.96
Oman	13.86	8.11	8.11	13.36	3.31	7.09	13.40	3.70	7.19
Qatar	13.86	27.73	12.99	4.15	-1.48	2.09	5.28	2.78	3.81
Saudi Arabia	26.27	8.71	14.91	0.51	6.24	1.85	9.12	7.41	6.56
Syria	13.37	2.86	3.46	---	---	---	12.89	2.86	3.31
Turkey	6.00	20.40	12.62	---	100.00	100.00	3.19	21.79	12.72
UAE	13.86	6.20	6.70	---	---	---	17.51	3.08	10.90
Yemen	39.32	0.74	16.52	-3.37	-19.82	-14.98	12.73	-4.06	1.53
North Africa	10.99	3.89	6.76	8.41	-73.78	-36.59	11.00	1.46	4.98
Algeria	20.23	6.65	12.38	---	---	---	19.62	6.65	11.83
Egypt	12.00	-1.29	4.39	8.41	-73.78	-36.02	12.01	-7.21	0.52
Libya	10.22	8.66	7.82	---	---	---	10.22	8.66	7.82
Morocco	3.85	5.85	4.96	---	---	---	3.85	5.85	4.96
Tunisia	0.49	3.72	1.55	---	---	---	0.49	3.72	1.55

--- = not applicable.

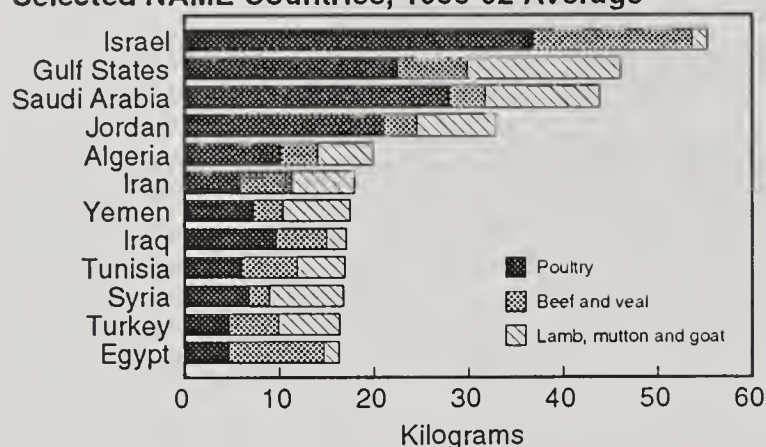
Source: USDA, ERS calculations.



increased sharply in many countries due to rising input costs, causing a further fall in consumption. As the industry adjusts to the higher cost structures associated with liberalization, as prices stabilize, and as household purchasing power increases from positive income growth, consumption is expected to increase. Many countries are consuming far below the average for their income group and have considerable potential

Figure 21

**Per Capita Meat Consumption, by Type, in Selected NAME Countries, 1988-92 Average**



to increase intake. However, consumption is likely to stabilize in the upper income countries where intake is already relatively high.

Despite recent declines in per capita intake, most countries, committed to increased self-sufficiency, have been reluctant to use poultry meat imports to satisfy demand. This has been due to a combination of factors, including pressure from domestic producers, reduced foreign exchange availability, and the differential between world feed grain, soymeal, and poultry prices (fig. 23). Between 1980 and 1992, self-sufficiency increased steadily from 72 to 87 percent. Import dependency in the Middle East is somewhat higher than in North Africa because of substantial imports by Saudi Arabia and the other high-income Gulf States, Bahrain, Kuwait, Oman, Qatar, and the UAE. From 1988 to 1992, these six countries accounted for 86 percent of the region's total poultry meat imports.

Most NAME countries provide some form of import protection to their producers. As production incentives have been reduced or terminated, governments have come under increasing pressure from producers to restrict imports. Although it is expected that trade barriers will be gradually lowered as part of a larger movement toward economic liberalization in

Table 10--Per capita poultry meat consumption in NAME countries, by income level and urbanization

Country/income level	Per capita consumption 1988-92 1/	1990		Average annual growth urbanization 1980-90
		Urbanization	GNP per capita	
	Kilograms	Percent	US\$	Percent
LOW-INCOME	4.7	47	600	3.1
Egypt	4.7	47	600	3.1
MIDDLE INCOME	9.2	51	1,182	4.8
Jordan	21.0	61	1,240	4.1
Lebanon	17.5	50	---	4.5
Algeria	10.2	52	2,060	4.8
Yemen	7.3	29	---	6.9
Tunisia	6.1	54	1,440	2.9
Iran	5.9	57	2,320	5.0
Morocco	5.0	48	950	4.3
Turkey	4.8	61	1,630	5.9
Syria	4.7	50	1,000	4.4
UPPER MIDDLE INCOME	20.6	57	3,014	5.1
Cyprus	28.5	--	8,020	---
Saudi Arabia	29.4	77	7,050	6.3
Oman	20.3	11	---	8.6
Libya	15.3	70	---	6.3
Iraq	9.5	71	---	4.4
HIGH INCOME	27.3	89	10,260	3.7
Bahrain	37.7	--	---	---
Israel	37.4	92	10,920	2.1
Qatar	34.7	--	15,860	---
Kuwait	20.4	96	---	5.0
UAE	6.3	78	19,860	3.9

1/ Based on ERS population estimates.

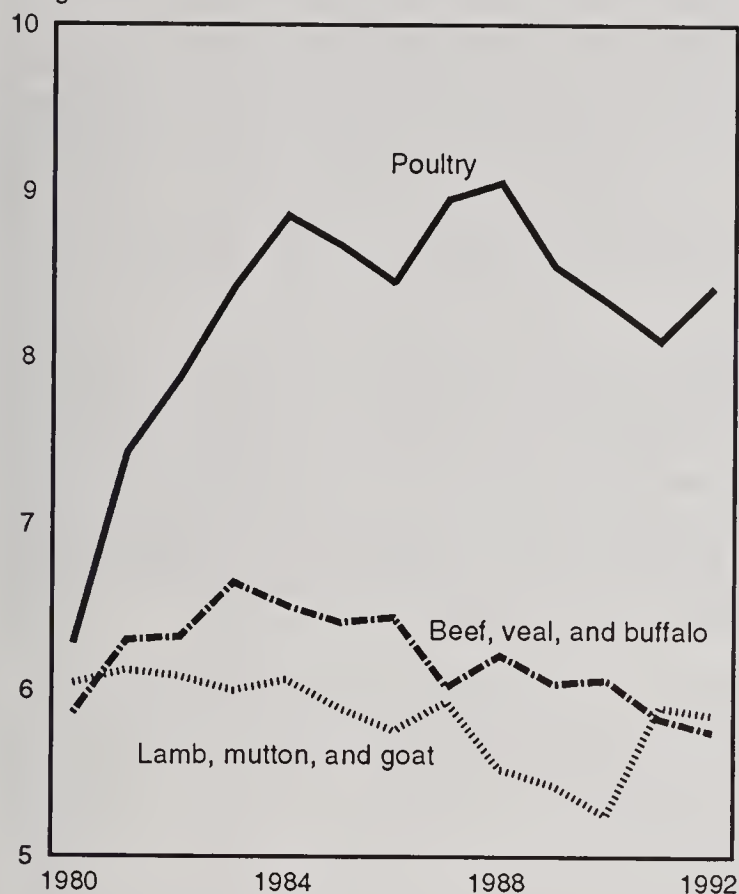
--- = not available; countries included in income group by World Bank.

Sources: USDA, FAS, "World Poultry Situation", Circular Series: FL&P 1-93, January 1993; United Nations, FAO, Agrostat database.

Figure 22

**NAME Per Capita Meat Consumption, 1980-92**

Kilograms



the region, several countries have recently imposed more restrictive import measures.

As part of the drive towards self-sufficiency, many countries have relied on parent-stock imports to increase their breeding capacity. The region is a good market for U.S. exports of live poultry, primarily baby chicks. Total U.S. shipments to the region increased 33 percent between 1980 and 1991, and grew more than threefold in 1992 (4.5 million birds) as Iran re-entered the market (appendix table 40).

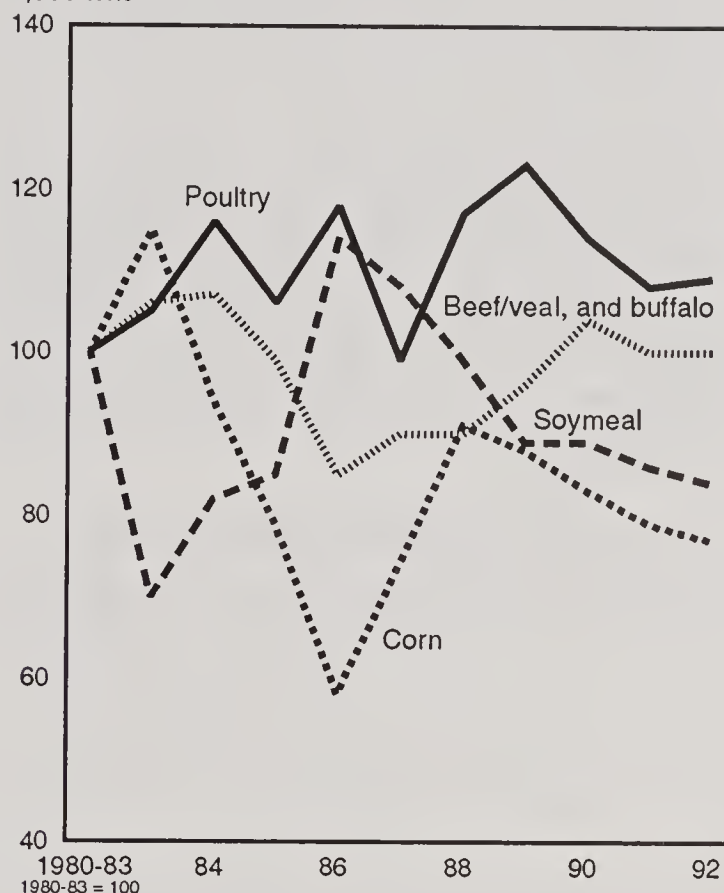
The United States has been less successful in penetrating the NAME poultry meat market due to subsidized competition from Brazil and the EC. Although competitive prices have recently increased, U.S. poultry meat exports to Iran in 1991, accounted for less than 15 percent of total Middle East frozen poultry imports. This was mainly a result of a failure to capture a significant share of the Saudi market. In 1992, NAME countries accounted for about 5 percent of total U.S. poultry meat exports. A number of factors affect U.S. competitiveness in the region, including prices, transportation costs, the flexibility of the EC subsidy system, and the inability of U.S. producers to meet packaging and processing specifications in Gulf markets.<sup>1</sup>

<sup>1</sup> USDA, Foreign Agricultural Service, *U.S. Dairy Livestock and Poultry Trade*, Featuring January-December 1992 Data, Circular Series FDLP 2-93, March 1993, p. 9.

Figure 23

**Price Indexes for Poultry, Beef/veal, and buffalo, Corn, and Soymeal**

1,000 tons



EEP, which provides cash bonuses for whole broiler exports and other commodities, has helped U.S. producers compete in the region. Between 1986 and 1992, the United States shipped over 176,000 tons of whole broilers to nine target countries in the region under EEP (table 11).

In 1992, EEP shipments accounted for 41 percent of total U.S. poultry meat exports to the targeted countries. However, a ban on poultry meat imports by Egypt and the loss of the Iraqi market have substantially reduced EEP shipments to the region. A sharp increase in EEP shipments in 1991 was due primarily to the Gulf War.

By 1998, most of the region's largest producers, as well as some of its smaller ones (such as Tunisia), will have eliminated feed subsidies, and substantially if not entirely, eliminated other protection for their poultry industries. Given the resulting streamlining of the sector and the higher-cost structure for feed ingredients, it is not clear that domestic producers will be able to keep pace with demand. Although past price trends suggest that increases in world feed prices are likely to remain below any increase in beef and poultry prices, EC export subsidies, low-cost imports from other suppliers, and expected long-term inefficiencies in the region's poultry industry are likely to increase demand for poultry imports.

**Algeria's Poultry Industry Growing Fast**

Algeria is North Africa's second largest poultry producer, accounting for more than a third of the region's output in



1992. Like other major producers in the region, Algeria's poultry sector is modern, capital intensive, and dependent on imports for an estimated 60-90 percent of its inputs. Because Algeria produces few feed grains or oilseeds, its poultry sector relies almost entirely on corn and soymeal imports for feed ingredients.

Algeria has the fastest growing poultry sector in the region, with output increasing nearly fivefold between 1980 and 1992. Growth was most rapid during the early 1980's, as the government promoted self-sufficiency with large feed subsidies and import controls on poultry products. Between 1989 and 1992, however, production growth slowed to an annual rate of less-than-1 percent as economic reforms, including the elimination of feed subsidies and the devaluation of the dinar, sharply increased input costs. Feed prices more than doubled between 1990 and 1992, forcing many smaller producers out of the industry.

### Urbanization and Income Drive Consumption

Poultry accounted for nearly 60 percent of Algeria's meat consumption in 1992 and the country's per capita intake of

10 kilos was slightly above the regional average for middle-income countries (table 12). Since 1989, however, the combined impact of poor economic growth and economic liberalization have resulted in a steady reduction in poultry consumption. Stagnant income growth and high inflation, combined with sharply higher retail prices from increased input costs, have reduced demand. Although retail prices are expected to stabilize over the next 2 to 3 years, poultry has become a relatively expensive protein source for the average household. For instance, average retail prices for other common protein foods, including sardines and eggs, are on average 40 to 50 percent below the price of poultry.

Algeria is totally self-sufficient in poultry meat and is expected to continue to promote its domestic industry through the importation of feed grains, meals, hatching eggs, and day-old breeding stock. Total imports of live poultry products in 1992 were estimated at 12 million chicks and 100 million hatching eggs. With U.S. prices 25 percent higher than those of the EC, American exporters are not competitive in the day-old chick market. This market is dominated by subsidized imports from Belgium, Italy, and Spain.

Table 11--U.S. exports of whole broilers under the Export Enhancement Program: 1986-92

Country	Actual shipments						
	1,000 tons						
Year	1986	1987	1988	1989	1990	1991	1992
Egypt	25,224	28,785	8,891	0	0	0	71
Gulf countries 1/	0	0	2,133	116	5,991	9,513	6,243
Iraq	0	62,714	0	0	0	0	0
Jordan 2/	---	---	---	---	3,109	8,989	0
Saudi Arabia	0	0	489	179	2,594	6,211	4,973
Total	25,224	91,499	11,513	295	11,694	24,713	11,287

1/ Bahrain, Kuwait, Oman, Qatar, United Arab Emirates. 2/ Added to program in 1990.  
Source: USDA, Foreign Agricultural Service, *U.S. Dairy Livestock and Poultry Trade, featuring: January-December 1992 data*, Circular series: FDLP 2-93, March 1993; USDA, FAS, unpublished data.

Table 12--Algeria: Poultry meat indicators

Year	Production	Imports	Consumption	Ending stocks	Self-sufficiency ratio 1/	Population	Per capita consumption
	-----1,000 tons-----				Percent	Million	Kilograms
1980	60	0	60	0	100.0	18.9	3.2
1981	75	9	84	0	89.3	19.5	4.3
1982	94	4	98	0	95.9	20.1	4.9
1983	112	2	114	0	98.2	20.8	5.5
1984	150	1	151	0	99.3	21.5	7.0
1985	165	0	160	5	103.1	22.2	7.2
1986	190	0	190	5	100.0	22.8	8.3
1987	225	0	225	5	100.0	23.5	9.6
1988	240	0	240	5	100.0	24.1	10.0
1989	260	0	260	5	100.0	24.7	10.5
1990	265	0	265	5	100.0	25.4	10.4
1991	260	0	260	5	100.0	26.0	10.0
1992	265	0	265	5	100.0	26.7	9.9

1/ Production/consumption.  
Sources: FAO, Agrostat database.

Over the next 2 to 3 years, the poultry industry is expected to begin a slow recovery as larger, more efficient, and more financially stable producers expand output. Preliminary forecasts estimate 1993 poultry production at 276,000 tons, a 4-percent increase over current levels. The industry's heavy dependence on imported feeds and other inputs is expected to continue. Output will in part depend on the price and availability of feed imports and the government's success in expanding domestic production of feed ingredients.

On the demand side, the Algerian Government has established a per capita poultry-meat-consumption target of 15 kilos. Given current consumption trends and projected increases in per capita income over the next 5 years (appendix table 34), a 5-percent reduction in real prices would be necessary to achieve this target by 1998. Under this scenario, per capita intake would increase at 8 percent, while production would grow 11 percent annually (fig. 24). Although the industry surpassed this growth rate in the early 1980's, given the sector's recent poor performance and increasing feed grain prices, it is unlikely to achieve such a growth rate in the near future.

A more likely scenario is one in which real prices increase or remain constant over the 5-year projection period. In the case of constant prices, per capita intake would reach 12.5 kilos and output would reach 392,000 tons by 1998. An assumed 50-percent reduction in income growth during the projection period would reduce per capita intake to just under 11 kilos in 1998. A 5-percent increase in real prices would result in negative per capita consumption growth and output of 310,000 tons in 1998.

### **Egyptian Poultry Output Hit by High Input Costs**

Egypt's poultry meat output has declined more than 21 percent since peaking at 279,000 tons in 1988 (table 13). The industry has suffered under the impact of economic liberalization, which has removed most government support. Although output grew at an annual rate of 12 percent between 1980 and

1985, growth was primarily a result of substantial government subsidies on feed grains and equipment. Such subsidies proved untenable, given the country's economic decline in the late 1980's.

When the Egyptian Government reduced corn imports in 1986 and then removed feed subsidies in 1988, the industry began

Figure 24

### **Algeria: Projected Per Capita Poultry Meat**

#### **Alternate Price and Income Scenarios, 1994-98**

Kilograms

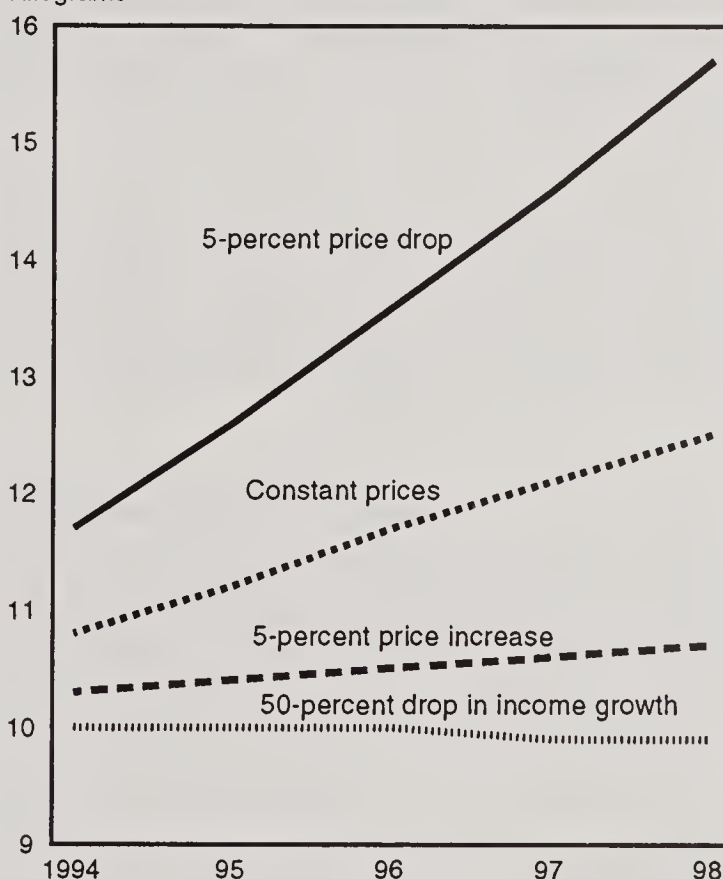


Table 13--Egypt: Poultry meat indicators

Year	Production	Imports	Consumption	Ending stocks	Self-sufficiency ratio 1/	Population	Per capita consumption
	-----1,000 tons-----				Percent	Million	Kilograms
1980	118	65	175	8	67.4	41.7	4.2
1981	143	115	251	15	57.0	42.9	5.9
1982	171	40	216	10	79.2	44.0	4.9
1983	186	130	311	15	59.8	45.1	6.9
1984	205	120	325	15	63.1	46.2	7.0
1985	215	99	319	10	67.4	47.3	6.7
1986	224	80	304	10	73.7	48.8	6.2
1987	254	65	319	10	79.6	50.0	6.4
1988	279	25	314	0	88.9	51.3	6.1
1989	254	25	279	0	91.0	52.5	5.3
1990	235	2	237	0	99.2	53.8	4.4
1991	225	2	227	0	99.1	55.1	4.1
1992	210	2	212	0	99.1	56.4	3.8

1/ Production/consumption.

Source: USDA, FAS, *World Poultry Situation*, Circular Series: FL&P 1-93; USDA, PS&D database; FAO Agrostat database.



a 5-year decline from which it is still attempting to recover. The removal of subsidies doubled feed prices within a year and forced more than 50 percent of producers, most of them small scale and inefficient, out of the industry. Subsidized imports of frozen poultry meat, primarily from the EC, put further pressure on the domestic industry and prompted the government to impose an import ban in 1988 to protect the remaining producers.

Although the import ban remains, output declined an additional 7 percent in 1992, and the industry continues to be affected by chronic feed shortages, poor feed quality, and rising input costs. A serious outbreak of a respiratory chicken disease in 1989 also hurt the industry. Currency devaluation and the imposition of a sales tax on feed ingredients have further increased local prices for corn, soybean meal, and concentrates.

Egypt's per capita consumption of poultry meat, estimated at 3.8 kilos in 1992, was the NAME's lowest. Poultry accounts for 23 percent of Egypt's per capita meat intake, compared to 37 percent in North Africa and 44 percent in the Middle East. Unlike other countries in the region, beef is the preferred meat in Egypt, with per capita beef consumption 2.5-times greater than poultry intake in 1992.

Since peaking at 7 kilos in 1984, per capita consumption has declined 47 percent, coinciding with declining domestic output, increased beef consumption, and the import ban. Unlike other major producers in the region, poultry is not significantly cheaper in Egypt than other types of meat. Poultry demand is, therefore, sensitive to price increases and to the availability of protein substitutes. Declining per capita incomes and higher poultry prices have weakened poultry demand.

Greater availability of red meat due to growing frozen beef imports and a recent government decision to permit imports of live slaughter cattle have increased beef consumption. Less expensive protein sources, including frozen beef liver, legumes, eggs, seafood, and dairy products, are also increasingly popular poultry substitutes.

In August 1992, the government increased the tariff on poultry meat from 5 to 85 percent, an apparent first step to lifting the import ban. To date, the ban remains. Imports continue to be limited to live breeding stock and small quantities of poultry meat for the Ministries of Defense and Tourism, which are excluded from the restrictions.

Prior to the imposition of the import ban in 1988, the United States was a significant exporter of poultry meat to Egypt, accounting for about 50 percent of its total imports in 1988. Since then shipments have fallen to less than 500 tons. In 1992, the USDA allocated 25,000 tons of whole broilers under EEP in anticipation of the lifting of the import ban. To date this year, the United States has sold 71 tons of broilers to the Egyptian Ministry of Defense under the current EEP allocation, which expires on December 31, 1993.

A marginal increase in poultry output to 215,000 tons is expected in 1993 due to negative per capita income growth and increased availability of red meat. Although the respira-

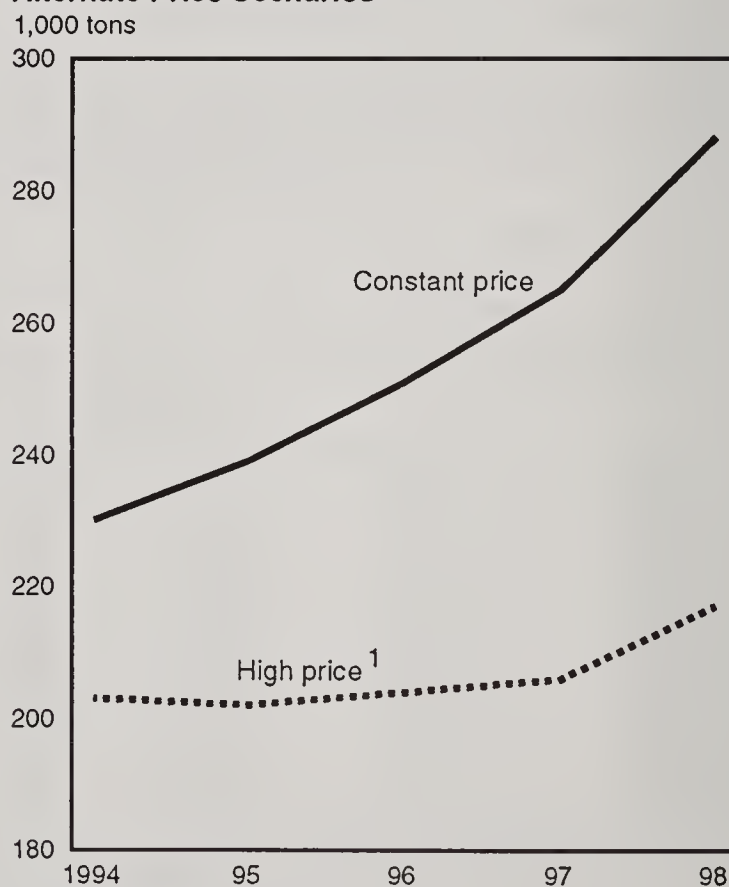
tory disease referred to above is largely under control, the industry will continue to face significant production constraints for the foreseeable future. For instance, infrastructure is weak, with insufficient slaughterhouses, freezing facilities, and marketing systems. Additionally, management is poor. Substantial quantities of foreign exchange will continue to be devoted to debt service in Egypt, further reducing the availability of imported inputs for domestic producers. Consequently, feed availability is expected to continue to fluctuate and feed quality will remain poor as producers substitute less expensive ingredients for corn.

Once the country emerges from the current reform period and moves to a period of positive income growth, projected to begin in 1994 (appendix table 34), demand for animal products, which is closely related to income growth, is expected to increase. Assuming constant retail prices, per capita intake is expected to reach 4.6 kilos in 1998 (fig. 25). If the import ban remains in place and annual population growth continues at 2 percent, the 4.6-kilo consumption level indicates a 6-percent annual increase in domestic poultry production over the next 5 years. A 5-percent price increase would have a strong negative impact on demand, with consumption stagnating at 235,000 tons in 1998.

With the Algerian industry now operating at about one-third of capacity and per capita consumption the lowest in the region, there is considerable room for increased domestic poultry production and consumption if long-term structural barriers to production are reduced. It is expected that demand

Figure 25

# **Egypt: Projected Poultry Meat Consumption Under Alternate Price Scenarios**



<sup>1</sup> 5-percent increase in real poultry meat prices.

for imports of poultry parts and whole broilers would respond positively to the removal of the import ban.

### ***Iran Is Region's Largest Poultry Producer***

Iran is the region's largest poultry producer, with 1992 output estimated by the FAO at 430,000 tons (table 14). Production growth has been less rapid in Iran than in other large producers in the region, but output has increased considerably since the end of the war with Iraq in 1988.

The Iranian Government provides substantial support to producers in the form of subsidized feed grains, import controls, and guaranteed support prices. Producer prices are set by the High Council for Economic Affairs, based on a complex formula that includes production costs, relative prices in terms of farmer's incomes, the inflation rate, and input prices. Iran imports a significant portion of its feed requirements, with 1992 corn imports estimated at 900,000 tons.

Poultry consumption accounts for 36 percent of per capita meat intake, which peaked at an estimated 7 kilos in 1992. Although Iran's current consumption is below the regional average and the average for other middle-income countries, per capita intake has increased more than 40 percent since 1987 because of an expansion in domestic output and positive income growth.

The government regulates poultry prices and consumption through an extensive system of food rationing, price controls, and public sector agricultural marketing. In the 1980's the government implemented a complicated ration book and coupon system to distribute essential commodities to consumers who were suffering from the effects of high war-time inflation. However, many households consume in excess of the ration amount by purchasing on the open market, where prices are significantly higher than in the official sector.

The government relaxed price controls on many commodities in 1990/91. Although poultry and other animal products, with

the exception of butter, remain under price controls and continue to be sold through the coupon system, some preliminary reforms are underway. Feed ingredients and other poultry inputs, for example, are being imported and priced at a depreciated exchange rate, and farmers are now allowed to sell 50 percent of their output at free-market prices.

Poultry imports declined considerably during the 1980's, due primarily to foreign exchange constraints and a government policy that promoted self-sufficiency in the agricultural sector. However, in 1992, the United States exported more than 7,500 tons of chicken parts to Iran, the first such shipment since the end of the Iran-Iraq War in 1988 (appendix table 37).

Iran is the region's largest market for U.S. live poultry. In 1992, the United States exported more than half a million baby chicks to Iran, more than a 10-fold increase over 1991.

Poultry demand will continue to be fueled by rising incomes and a growing, and increasingly urban, population. Iran should continue to be a strong live-poultry market as the government continues to promote increased domestic capacity as part of its larger goal to improve food security and reduce the country's dependence on imported broilers and chicken parts.

### ***Saudi Arabia Still Region's Largest Poultry Meat Importer***

Saudi Arabia has become increasingly self-sufficient in poultry production. Although the country is the NAME region's largest importer of poultry meat, imports have accounted for a declining percentage of consumption as domestic production has expanded rapidly (table 15). In 1992, poultry output reached a record 303,000 tons, accounting for nearly 20 percent of the Middle East's output and nearly 60 percent of its total domestic consumption.

The Saudi Government has targeted the poultry industry as part of a larger effort to increase food self-sufficiency. Sub-

Table 14--Iran: Poultry meat indicators

Year	Production	Imports 1/	Consumption	Ending stocks	Self-sufficiency ratio 2/	Population	Per capita consumption
	-----1,000 tons-----				Percent	Million	Kilograms
1980	211	6	217	0	97.2	38.8	5.6
1981	213	66	279	0	76.3	40.3	6.9
1982	215	39	254	0	84.6	41.8	6.1
1983	230	43	273	0	84.2	43.3	6.3
1984	235	42	277	0	84.8	44.8	6.2
1985	245	45	290	0	84.5	46.3	6.3
1986	250	45	295	0	84.7	49.3	6.0
1987	255	45	300	0	85.0	51.2	5.9
1988	266	45	311	0	85.5	53.1	5.9
1989	284	0	284	0	100.0	55.0	5.2
1990	305	0	305	0	100.0	57.0	5.4
1991	361	0	361	0	100.0	59.1	6.1
1992	430	8	438	0	98.2	61.2	7.2

1/ ERS estimate.

2/ Production/consumption.

Source: FAO, Agrostat database.



Table 15--Saudi Arabia: Poultry meat indicators

Year	Production	Imports	Consumption	Ending stocks	Self-sufficiency ratio 1/	Population	Per capita consumption
	-----1,000 tons-----				Percent	Million	Kilograms
1980	50	194	244	0	20.5	10.1	24.1
1981	62	182	244	0	25.4	10.8	22.6
1982	80	209	289	0	27.7	11.4	25.3
1983	136	227	363	0	37.5	12.1	30.1
1984	151	235	386	0	39.1	12.8	30.3
1985	186	199	385	0	48.3	13.5	28.6
1986	196	183	377	2	52.0	14.1	26.7
1987	236	184	420	2	56.2	14.7	28.5
1988	248	194	467	12	53.1	15.3	30.5
1989	240	194	424	20	56.6	16.0	26.5
1990	265	209	445	48	59.6	16.3	27.3
1991	285	245	506	70	56.3	16.5	30.7
1992	303	250	546	36	55.5	17.1	32.0

1/ Production/consumption.

Sources: USDA, FAS, *World Poultry Situation*, Circular Series: FL&P 1-93; January 1993; USDA, PS&D database.

sequently, producers receive extensive government support through a number of policy mechanisms, including reduced interest rates on capital equipment and feed subsidies. The government provides interest-free loans to new, viable poultry farms and pays 30 percent of the cost of poultry equipment. Producers receive a 30-percent subsidy (c.i.f. basis) on the cost of farm machinery for self-financed projects and a 20-percent subsidy if the project is financed by a loan from the Saudi Arabia Agricultural Bank. The government also provides a substantial subsidy for imported feed corn and soy-meal.

The Saudi poultry industry is highly concentrated, with 80 percent of all output produced by a few large, modern broiler operations located close to the major urban centers.

Rising incomes and increased access to a well-established retail market have significantly increased consumer preferences for high-value and value-added food products, including meat, poultry, and dairy products. Such purchases are facilitated by modern, Western-style urban supermarkets that offer consumers a wide variety of domestic and imported foods. The frozen, prepared, and fast food markets have also expanded recently, as has consumer price consciousness and the demand for health and dietetic foods.

Per capita food consumption is approaching that of Western countries, with daily intake growing from 1,776 calories per person in 1960 to 3,023 in 1991. Subsequently, animal products have gained in importance and now provide more than a third of total protein intake. Poultry has been an important component of these changing dietary patterns and is now the preferred source of protein by Saudis. In 1992, poultry accounted for more than half of total meat consumption, with per capita intake triple the regional average. Per capita intake of poultry meat now exceeds that of Western Europe and is close to the U.S. level.

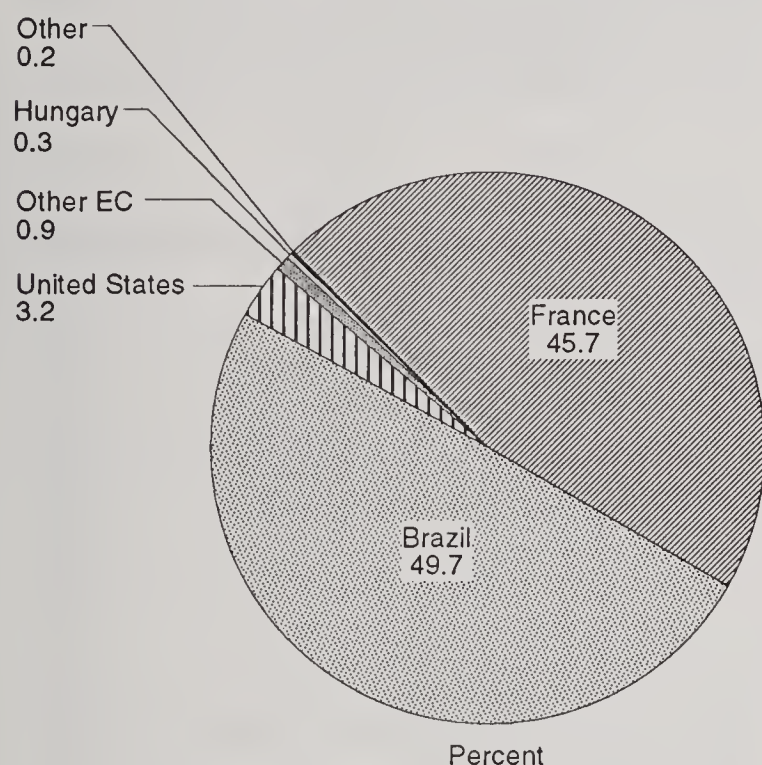
A growing and extensive network of American and locally based fast-food outlets have also contributed to increased poultry consumption. These establishments are increasing the demand for Western-style foods and are utilizing large quantities of chicken meat, including a large portion of poultry imports.

Saudi Arabia accounted for more than 60 percent of total poultry imports to the NAME region in 1992. Between 1980 and 1992, imports grew at an annual rate of 15 percent but have accounted for a declining share of consumption, as the government pursued a policy of poultry self-sufficiency. Saudi imports are controlled by a small number of private companies, while the government enforces the country's extensive set of health and quality regulations. The current duty on poultry imports is 20 percent ad valorem or \$0.267 per kilo, whichever is higher.

France and Brazil are Saudi Arabia's leading suppliers of poultry meat, with the United States typically accounting for only a small share of the market (fig. 26). The United States exported just over 13,000 tons of poultry meat to Saudi Arabia in 1992, about 6 percent of total poultry imports (appendix table 37). EEP has supported U.S. exporters, who have faced increasing competition from the EC. Since 1988, U.S. poultry exports to Saudi Arabia have increased more than 500 percent from a low base of just over 2,000 tons. EEP sales have accounted for 42 percent of this increase. In 1992, EEP sales accounted for more than 60 percent of the total value of whole-broiler exports Saudi Arabia, and 37 percent of total U.S. exports of poultry meat.

The import market is in part constrained by consumers who prefer locally produced poultry meat over imported frozen varieties and are willing to pay higher prices for it. Prices for local fresh poultry meat are 30 percent higher on average than frozen imports and 14 percent higher than local frozen poultry. Most imported meats are sold to commercial outlets such as hotels, restaurants, and hospitals.

Figure 26  
Saudi Arabia's Poultry Meat Suppliers, 1991



The government has relied on imports of live poultry, including parent stock and day-old chicks, to increase domestic self-sufficiency. However, these imports are expected to decline in the future because of increased domestic output by the Saudi Pure Breed Company. The company is using grand-parent stock and technology imported from Holland to increase the domestic supply of parent stock and day-old chicks.

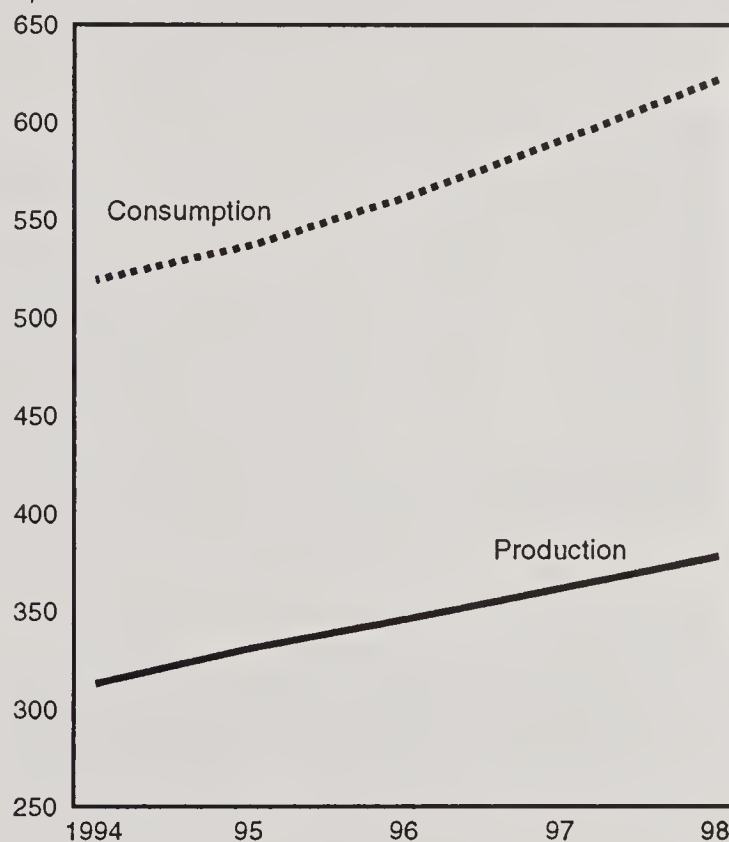
#### Production Increases To Continue

The Saudi poultry sector is expected to continue to expand for the next several years, albeit at a reduced rate. Output is expected to increase 5-percent in 1993 to 318,000 tons and then grow at a 6-percent annual rate through 1995, as the country's two largest poultry producers go ahead with an anticipated increase in production capacity (fig. 27). Most small producers will realize modest increases in output, while few are expected to leave the industry. Under this scenario, production will rise to 378,000 tons by 1998.

The Saudi Government will continue to approve licenses for new broiler operations and offer significant incentives to domestic producers. Poultry prices are expected to continue to average 30-35 percent below those for beef and mutton. Under this price differential, poultry will maintain its place as the preferred protein source.

Assuming current consumption trends, per capita intake is expected to increase at an annual rate of 1.5 percent during the next 5 years. Imports are expected to maintain their current market share and reach 254,000 tons, or 41 percent of total consumption by 1998.

Figure 27  
Saudi Arabia: Projected Poultry Meat Consumption, 1994-98  
1,000 tons



#### Turkey's Poultry Meat Output Triples In Recent Years

Turkey's poultry production nearly tripled since 1986 to a record 330,000 tons in 1992. Turkey became a net importer of poultry for the first time in 1992 following a 1991 rinderpest outbreak in the cattle sector that dampened red meat intake and sharply increased poultry demand. A 50-percent increase in retail poultry prices late in the year led to the import of nearly 2,000 tons of cheap poultry meat, primarily from Bulgaria.

Increased imports and declining domestic demand due to higher poultry prices as well as renewed supplies of red meat and fish, resulted in excess poultry supplies in the latter half of 1992. Producers have responded to the weakened domestic market with an unprecedented consumer advertising campaign and have petitioned the government for increased export subsidies and import protection. Output has grown steadily since 1980, and Turkey is now the region's second largest poultry producer (table 16). The government has provided poultry producers with limited incentives, including a rebate on capital investments and an export subsidy, but support has been far below that provided by other major producing countries.

Domestic prices are determined by the market and most marketing is handled within the private sector. The State Meat and Fish Organization accounts for only about 10 percent of all poultry purchases.



Table 16--Turkey: Poultry meat indicators

Year	Production	Imports	Consumption	Ending stocks	Self-sufficiency ratio 1/	Population	Per capita consumption
	-----1,000 tons-----				Percent	Million	Kilograms
1980	80	0	81	6	98.8	45.1	1.8
1981	83	0	82	6	101.2	46.2	1.8
1982	87	0	84	8	103.6	47.3	1.8
1983	91	0	89	7	102.2	48.4	1.8
1984	98	0	94	7	104.3	49.6	1.9
1985	108	0	95	10	113.7	50.7	1.9
1986	119	0	111	14	107.2	51.9	2.1
1987	221	0	215	15	102.8	53.1	4.1
1988	236	0	228	15	103.5	54.3	4.2
1989	254	0	252	15	100.8	55.5	4.5
1990	269	0	268	15	100.4	56.7	4.7
1991	284	0	283	16	100.4	57.9	4.9
1992	330	2	332	15	99.4	59.2	5.6

1/ Production/consumption.

Sources: USDA, FAS, *World Poultry Situation*, Circular Series: FL&P 1-93, January 1993; USDA, PS&D database.

Per capita consumption of poultry meat has increased steadily since 1980. Although intake remains more than 50 percent below the regional average, poultry has accounted for a growing percentage of total meat intake. The share increased from 14 percent in 1980 to a third of all consumption in 1992. The increase has been largely at the expense of lamb, mutton, and goat. These have been the traditional meats consumed in Turkey but their importance has declined sharply since 1980. Poultry has also become an increasingly popular substitute for beef, which accounted for the smallest share of meat consumption in 1992.

Turkey has historically been self-sufficient in poultry production, although per capita output has been low relative to other producers in the region. It has exported small quantities each year to neighboring countries. Cyprus and the former Yugoslavia were the primary markets in 1992. Exporters receive a government subsidy of \$200 per ton exported, however, exports continue to be limited by high production costs and competition from the EC, as well as growing domestic demand.

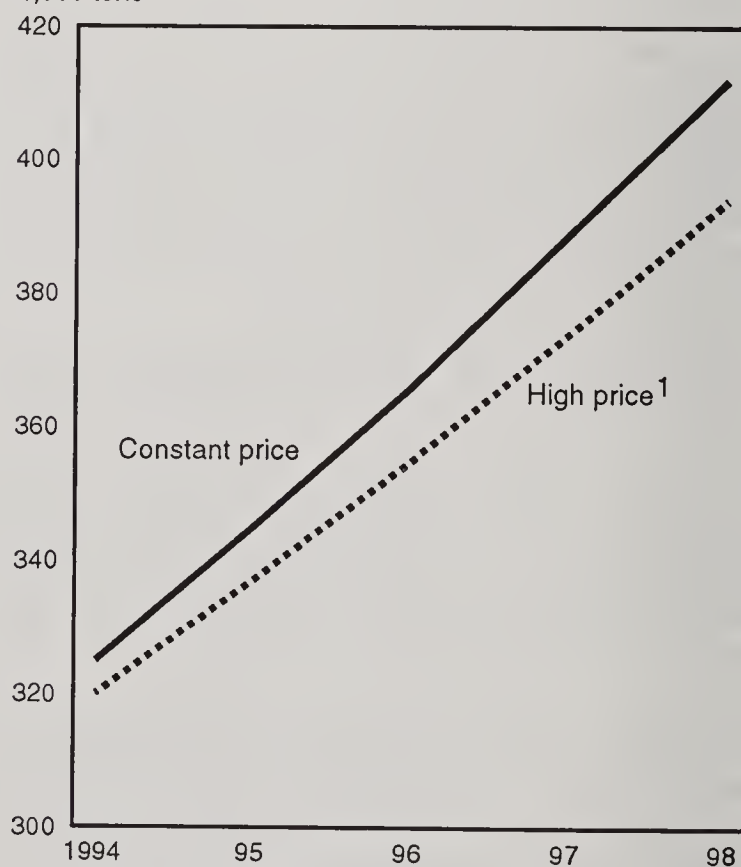
Late in 1992, the Turkish Government came under increasing pressure from domestic producers to impose import controls following an inflow of cheap imports from Bulgaria, Germany, and Switzerland. In January 1993, the government acted to protect domestic producers through a comprehensive new import regime for a wide range of agricultural commodities. The government lowered the import duty on poultry from 30 to 5 percent but added a \$600- per-ton surtax on all poultry imports where none had existed previously. The government also changed import regulations and imposed restrictions on poultry imports, including strict hygiene standards for foreign slaughterhouses. The combined effect of these measures should severely limit, if not eliminate, poultry imports for the foreseeable future.

Turkey is a significant market for U.S. exports of live poultry. Total 1992 exports exceeded 220,000 chicks, with shipments

Figure 28

### Turkey: Projected Poultry Meat Production Under Price Scenarios, 1994-98

1,000 tons

<sup>1</sup> 5-percent increase in real poultry meat prices

growing more than 88 percent between 1988 and 1992, (appendix table 37). Exports of baby chicks accounted for more than 90 percent of this market.

Income growth and an aggressive promotion campaign by poultry producers are expected to continue to fuel poultry demand over the next 5 years. A slight rise in poultry meat

output to 335,000 tons is anticipated in 1993. Assuming no change in real prices, demand is expected to keep pace with income and population growth and increase at an annual rate of 5.4 percent (fig. 28). Per capita consumption will rise to 6.6 kilos through 1998. Although this represents a substantial increase from current levels, it is still well below the 9.2-kilo

average for other middle-income countries in the region. In the absence of imports, production would have to grow at an average-annual rate of 5.3 percent, far below the rate achieved in the recent past. A 5-percent increase in real prices would result in output of under 400,000 tons in 1998.

## Region's Beef Output Rising

*Beef output continued to rise in 1992 but at a slower rate than in the past. Per capita consumption declined for the fourth straight year as a result of decreased consumer purchasing power and higher beef prices. Imports rose slightly to 21 percent of total consumption as Egypt lifted its import ban on frozen beef. Substantial government production incentives are largely responsible for the region's increased output.*  
[Linda Scott]

The NAME region produced 1.5 million tons of beef and veal, including water buffalo, in 1992. Beef accounted for 46 percent of red meat output, while lamb, mutton, and goat totaled 54 percent (fig. 29 and 30). More than 75 percent of the region's beef output in 1992 was produced in Egypt, Iran, Morocco, and Turkey. Water buffalo accounted for 24 percent of total meat output in Egypt.

Beef output grew at an annual 3-percent rate between 1980 and 1992 led by substantial increases in Israel, Algeria, Yemen, and Iran (table 17).<sup>1</sup> Beef production in Iran has grown more than 50 percent since the end of the war with Iraq in 1988. Substantial government production incentives were largely responsible for the region's increased output during this period. Incentives ranged from import subsidies on feeder and slaughter cattle and restrictions on beef imports to export controls on live cattle and discounted veterinary services. Governments also provide guaranteed support prices and subsidies on meat exports.

Increased feed prices, resulting from the removal of subsidies, have affected feed quality in the beef sector through decreased use of corn and soymeal supplements, most of which are imported. In general, the region's beef sector is less commercialized and less capital intensive than the poultry industry. Barley, an important feed ingredient, is widely produced in the region. Pasture feeding is widespread and, while feedlots are rare, their numbers are increasing. Most beef is produced on small farms in combination with crop and dairy production. Cattle are also an important source of draught power, particularly for small producers.

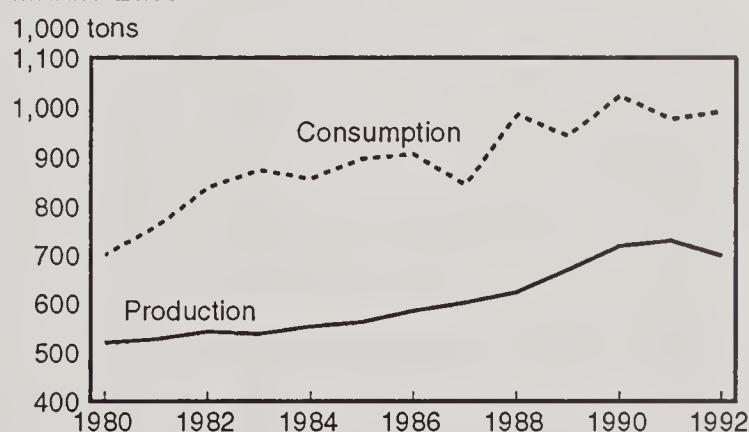
Although the beef sector is less import dependent, the region's limited land base favors poultry production. Other production

constraints in the beef sector are: poor range management, inferior animal quality, loss of pasture land through increased urbanization and increased food grain area, inadequate infrastructure for slaughter, insufficient processing and marketing facilities.

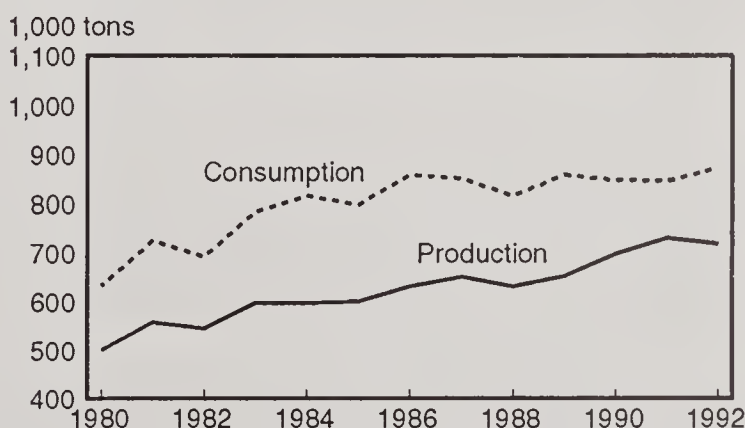
Figure 29

### NAME Beef, Veal, and Buffalo Use

#### Middle East



#### North Africa

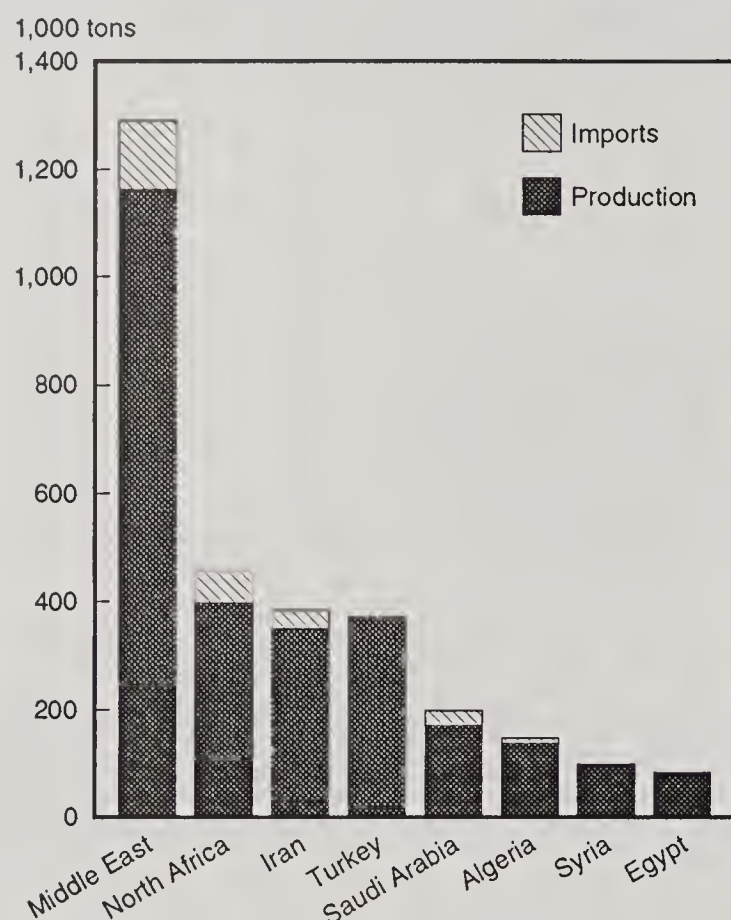


<sup>1</sup> In many countries, red meat output is undercounted because a significant number of livestock are slaughtered outside municipal slaughterhouses. Festival slaughter during Muslim holidays of sheep and lambs is often underestimated as well.



Figure 30

## Lamb, Mutton, and Goat Consumption in NAME, 1992

**Beef Consumption Stable as Poultry Gains**

Per capita beef consumption in the region declined for the third straight year in 1992 as decreased consumer purchasing power and higher prices, caused by reduced domestic availability, offset population based demand. Consumption was highest in North Africa due to heavy beef intake in Egypt. Consumption was somewhat lower in the Middle East, where lamb, mutton, and goat remain popular, especially in rural areas. Israel, and the Gulf States of Bahrain, Kuwait, Oman, Qatar, and the UAE were exceptions, as high incomes and urbanization fueled beef demand. Several of the region's largest producers, including Algeria, Iran, and Morocco, subsidize beef consumption through government-controlled retail prices.

Since 1980, beef has accounted for a steady 30-percent share of total meat intake in the region. More than half the increase in meat consumption occurred in the poultry sector. Relatively lower poultry prices were largely responsible for this trend, as beef consumption remains limited to more affluent households (fig. 31). Beef intake is low relative to Western standards, accounting for less than 2 percent of total calories in 1990, compared to 6 percent in the United States and 3 percent in Europe. However, the high fat content of lamb, mutton, and goat, still the most widely consumed meats in the Middle East, is beginning to increase the popularity of beef, particularly in high-income, health-conscious urban areas.

Table 17--Growth rates in NAME beef, veal, and buffalo sector, 1980-92

Country/ region	Production			Imports			Consumption		
	1980-85	1986-92	1980-92	1980-85	1986-92	1980-92	1980-85	1986-92	1980-92
Percent									
Middle East	1.6	5.0	3.3	13.3	-5.7	1.2	4.9	1.8	2.6
Bahrain	0.0	0.0	4.1	-5.7	-2.2	-0.2	-4.7	-1.8	0.5
Cyprus	8.1	4.5	8.5	8.3	-3.3	2.7	8.1	0.7	5.5
Iran	-0.4	9.1	3.8	-2.8	-5.0	4.9	-1.0	5.3	4.1
Iraq	-0.9	-2.9	-0.5	44.1	---	-6.4	19.0	-16.3	-2.8
Israel	6.0	-0.5	8.6	7.7	-1.5	-6.4	10.9	-0.5	2.8
Jordan	-13.9	0.0	-5.1	---	-1.7	9.5	45.2	-9.0	2.7
Kuwait	-22.0	0.0	-20.8	13.9	-6.4	0.4	1.0	0.0	-6.2
Lebanon	3.1	0.0	1.4	-15.2	-9.4	-12.2	-5.0	-2.8	-3.9
Oman	-5.8	0.0	-2.0	4.5	14.1	12.5	-1.4	8.2	4.7
Oatar	0.0	0.0	11.0	---	---	0.4	0.0	0.0	4.3
Saudi Arabia	5.0	8.8	5.5	6.4	-2.7	-0.2	6.0	0.5	1.7
Syria	2.9	-0.7	-1.7	---	---	---	2.9	-0.7	-1.7
Turkey	2.8	4.5	3.5	---	-3.6	---	3.4	3.6	4.2
UAE	8.1	-8.1	-1.5	4.5	4.8	0.7	5.3	6.4	-0.1
Yemen	7.1	5.5	6.3	17.5	20.1	7.2	8.4	6.5	6.3
North Africa	3.6	2.6	2.9	8.1	-8.0	-0.6	4.6	0.3	2.3
Algeria	8.0	7.3	6.9	13.6	---	-3.3	9.4	3.6	5.1
Egypt	3.7	3.0	3.3	7.9	-7.7	0.1	4.9	0.2	2.5
Libya	-8.1	-1.6	-6.1	-2.4	-34.1	-17.2	-6.4	-7.1	-8.1
Morocco	4.2	0.4	2.4	0.7	-2.3	0.9	4.1	0.3	2.3
Tunisia	6.5	-1.1	1.8	23.3	2.9	7.8	9.5	-0.1	3.1

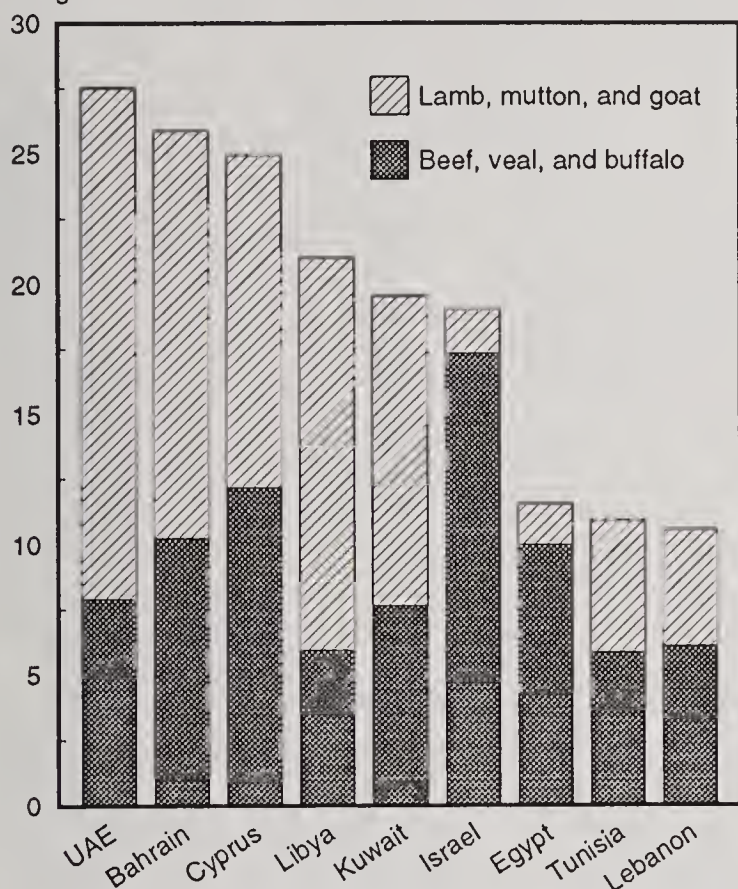
--- = not available.

Source: USDA, ERS calculations.

Figure 31

**NAME Per Capita Red Meat Intake, 1988-92 Average**

Kilograms

**Self-Sufficiency Increases Under Declining Imports**

Imports continue to account for a declining share of beef consumption as domestic production growth and aggressive import controls have increased self-sufficiency. The region's 400,000 tons of imports accounted for 21 percent of total beef consumption in 1992. Imports peaked at 565,000 tons and were 33 percent of consumption in 1984.

The Middle East is somewhat more import-dependent than North Africa because of low self-sufficiency rates in Jordan and the Gulf States. In North Africa, import dependency was highest in Egypt and lowest in Morocco, where imports accounted for less than 4 percent of total intake. Most countries in the region protect domestic producers with import controls, including tariffs and quotas.

The U.S. share of the region's beef market is small. In 1992, U.S. shipments of fresh chilled, frozen, and processed beef and beef offals accounted for less than 5 percent of the region's import total. Although American beef is viewed favorably, the United States has not been price competitive. Beef is still a relatively expensive item for most of the region's households. It is typically consumed in stews, where quality is less important. For these reasons, low-cost products from the EC, Argentina, and Uruguay dominate the market (table 18). Demand for U.S. beef is concentrated in the hotels and restaurants that serve the tourist industry.

Table 18--Beef suppliers to selected NAME countries 1991

Exporter	Importer			
	Egypt 1/	Israel	Saudi Arabia	Turkey
Tons				
EC	80,000	3,654	44,200	20,503
Uruguay	-	14,462	-	-
Argentina	-	13,299	-	-
Brazil	-	11,712	-	-
U.S.	48	53	1,935	-
Bulgaria	-	-	-	1,812
Hungary	-	-	-	1,359
Poland	-	-	-	521
Other	-	-	-	-
E. Europe	-	-	-	486
Malaysia	-	-	6,119	-
Australia	-	-	2,658	-
Other	5,000	307	-	217
Total	85,048	43,487	54,912	24,898

1/ Does not include variety meats, edible offals.

- = not applicable.

Source: USDA, FAS, Agricultural Attache, Livestock reports, various countries.

Over the next 5 years, beef output in the region should continue to rise. Assuming a linear trend increase, output of beef, veal, and buffalo will grow at an annual 2.5-percent rate in the Middle East and 2.2 percent in North Africa. Imports will stagnate in both regions as countries attempt to reduce import dependency. Total consumption in the region will reach 2.1 million tons in 1998, a 16-percent increase from 1992.

Beef output will remain steady through 1993 with production growth of less than 1 percent forecast for some of the region's major producers including Egypt and Turkey. The pattern of slow growth should continue over the next 5 years as output gains are limited by resource constraints. Consumption gains are also expected to be moderate, as increased health awareness, high retail prices relative to poultry prices and government import controls on beef, limit red meat intake.

A possible exception to this trend is Egypt, where the removal of the import ban on frozen beef may combine with high poultry prices to increase beef consumption. Consumption growth may also exceed the regional average in Israel, as the purchasing power of recent immigrants increases and proposed liberalization of beef imports is implemented.

**Egypt Is Region's Largest Red Meat Producer**

Egypt is the region's largest producer of beef, veal, and buffalo, accounting for 29 percent of NAME's total output in 1992 and 60 percent of North Africa's production (table 19). Nearly 24 percent of total output is water buffalo meat. About 90 percent of cattle and buffalo are raised by small producers.

Egypt's livestock industry expanded at a steady 3-percent annual rate between 1980 and 1992, with strong government support in the form of feed subsidies, import restrictions, and



Table 19--Egypt: Beef, veal, and buffalo meat indicators

Year	Total slaughter	Production	Imports	Consumption	Ending stocks	Self-sufficiency ratio 1/	Production	Per capita consumption
	1,000 head	-----1,000 tons-----				Percent	Million	Kilograms
1980	1,611	280	95	375	0	74.7	41.7	9.0
1981	1,726	301	120	421	0	71.5	42.9	9.8
1982	1,852	327	108	435	0	75.2	44.0	9.9
1983	1,887	333	139	472	0	70.6	45.1	10.5
1984	1,934	349	160	509	0	68.6	46.2	11.0
1985	1,864	337	141	478	0	70.5	47.3	10.1
1986	1,988	365	176	541	0	67.5	48.8	11.1
1987	2,076	384	170	554	0	69.3	50.0	11.1
1988	2,055	381	150	531	0	71.8	51.3	10.4
1989	2,057	386	181	567	0	68.1	52.5	10.8
1990	2,187	408	120	528	0	77.3	53.8	9.8
1991	2,244	426	85	510	0	83.5	55.1	9.3
1992	2,233	424	120	546	0	77.7	56.4	9.7

1/ Production/consumption.

Sources: USDA, FAS, PS&D database; USDA, FAS, *Dairy, Livestock and Poultry: World Livestock Situation*, Circular Series: FL&P 2-93, April 1993.

funding of the National Buffalo Project (NBP). The primary purpose of the NBP was to fatten buffalo calves for slaughter to increase the country's self-sufficiency in red meat. During its 6 years of operation (1984-1990), output from the project grew from 50,000 to 575,000 head. In recent years, however, the project was plagued by government financial constraints and never produced at full capacity. Government support was withdrawn in 1992, resulting in the project's collapse.

Egypt is the largest per capita consumer of beef products in North Africa. Consumption is 36 percent above the regional average and almost double the NAME average. Consumption grew sharply in the mid-1980's because of reduced prices and increased domestic supplies from the NBP. However, high inflation and reduced consumer purchasing power caused a downturn as consumers switched to less expensive protein sources in 1990 and 1991. Increased beef imports caused a small rebound in per capita consumption in 1992.

The closure of the NBP and the elimination of feed subsidies in 1992 increased beef prices and reduced per capita output, prompting the government to lift its 3-year ban on imports of ready-to-slaughter feeder cattle, frozen beef, and beef products. In 1992, imports increased 41 percent to 120,000 tons and are expected to increase to 130,000 tons in 1993 because of reduced domestic supplies and increased consumer acceptance of frozen beef.

The United States accounted for less than 10 percent of Egypt's beef imports in 1992. Following the removal of the import ban, U.S. shipments increased 57 percent between 1991 and 1992 and the United States continues to compete with lower priced exports from South America and the EC. Increased consumer demand for beef livers and variety meats, as well as hamburger and sausage, has recently expanded U.S. market opportunities. Although imports of U.S. fresh and frozen beef are limited primarily to the tourist trade, the United States is Egypt's largest supplier of frozen beef livers (appendix table 37).

### ***Israel's Dairy Herd Is Prime Source of Red Meat***

Israel is the region's largest beef producer on a per capita basis, with output typically two to three times above the regional average (fig. 32). However, high population growth due to a recent wave of immigration from the FSU has steadily reduced the figure. In 1992, per capita beef output fell for the fourth straight year, dropping from a high of 9.7 kilos in 1987 (table 20).

Israel's large dairy herd is the country's primary source of beef. The beef herd is small and pasture fed, primarily in Upper Galilee. Production is constrained by limited pasture land, exacerbated by 6 years of partial drought beginning in the mid-1980's. A long dry season from May to October requires the use of feed grain supplements, mostly from the United States.

Beef accounted for an average of 36 percent of total meat consumption during the 1988-1992 period, although beef intake was only about half that of poultry, which accounted for 62 percent. An expected increase in consumption due to the influx of 400,000 immigrants from the FSU failed to materialize last year because of the group's limited purchasing power.

Beef is still a relatively expensive item for most households, and beyond the reach of the new immigrants, many of whom were initially unemployed or underemployed. Demand has recently been negatively affected by a boycott of Israeli products in the Occupied Territories, particularly the West Bank. In the past, this market accounted for up to 25 percent of the country's beef consumption.

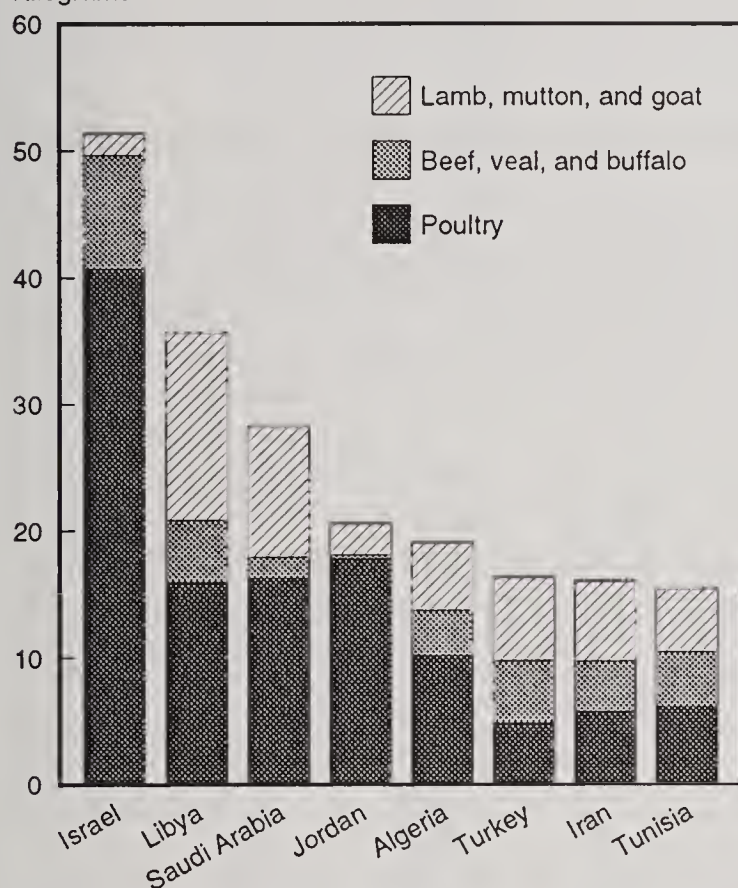
Israel depends on imports for about 50 percent of beef availability, although this percentage has dropped significantly since peaking at 89 percent in 1980. This increase in self-sufficiency is explained largely by active public support of domestic producers through import controls and other incen-

tives. Beef is the only commodity still imported by the government, which controls prices and supplies through import duties and export quotas.

Figure 32

# **NAME Per Capita Meat Production, 1992**

Kilograms



Privatization of beef imports was scheduled to be implemented on January 1, 1993, but did not happen because of administrative delays and objections by beef producers and religious groups. Religious groups have fought privatization under a broader legislative agenda that would require food imports to be kosher. They fear that reduced government controls would significantly increase imports and consumption of non-kosher beef. Under the proposed import liberalization, export quotas and licenses would be abolished and the current agricultural variable levy would be adjusted to a fixed amount, plus an ad valorem levy fixed in relation to local production costs. These costs would be reduced over a 5-year period to 8-12 percent of c.i.f. value.

The United States exported 53 tons of beef to Israel in 1991 and made no shipments in 1992. American beef is perceived to be of high quality by Israeli meat processors, who would like to import U.S. meat for processing and re-export to Europe. The privatization of imports and the cancellation of customs duties by 1995 under the U.S.-Israel Free Trade Agreement is expected to improve demand for U.S. beef. Brazil, Argentina, and Uruguay are currently the country's major beef suppliers.

## **Morocco Is Self-Sufficient in Beef**

Morocco is the region's fourth largest producer of beef and veal. Livestock accounts for one-third of agriculture's contribution to GDP. Beef and veal output declined substantially in 1992, mainly because a severe drought reduced feed availability and increased feed prices (table 21). The drought also sharply reduced feed grain output and worsened pasture conditions. Although slaughter declined nearly 7 percent, a \$30-million government program distributed subsidized feed to producers and reduced duties on feed imports and prevented more widespread loss of the livestock. The government has recently announced a 50-percent feed subsidy for livestock

Table 20--Israel: Beef, veal, and buffalo meat indicators

Year	Total slaughter	Production	Imports	Consumption	Ending stocks	Self-sufficiency ratio 1/	Population	Per capita consumption
	1,000 head	-----1,000 tons-----				Percent	Million	Kilograms
1980	91	17	32	36	13	47.2	3.7	9.6
1981	64	16	54	66	17	24.2	3.8	17.4
1982	75	18	56	75	16	24.0	3.9	19.4
1983	70	17	45	71	7	23.9	3.8	18.6
1984	133	18	43	66	2	27.3	3.9	17.0
1985	25	23	47	62	10	37.1	3.9	15.8
1986	109	38	42	81	9	46.9	4.0	20.3
1987	111	39	41	73	9	53.4	4.0	18.1
1988	105	35	44	70	16	50.0	4.1	17.1
1989	105	39	38	73	13	53.4	4.1	17.6
1990	110	40	31	75	8	53.3	4.3	17.4
1991	107	42	43	81	11	51.9	4.5	17.8
1992	105	39	39	79	9	49.4	4.7	16.6

1/ Production/consumption.

Source: USDA, FAS, PS&D database; USDA, FAS, *Dairy, Livestock and Poultry: World Livestock Situation* Circular Series: FL&P 2-93, April 1993.



Table 21--Morocco: Beef, veal, and buffalo meat indicators

Year	Total slaughter	Production	Imports 1/	Consumption	Ending stocks	Self-sufficiency ratio 2/	Population	Per capita consumption
	1,000 head	-----1,000 tons-----				Percent	Million	Kilograms
1980	770	107	4	111	0	96.4	20.5	5.4
1981	1,050	135	4	139	0	97.1	21.0	6.6
1982	750	101	4	105	0	96.2	21.5	4.9
1983	700	124	4	128	0	96.9	22.0	5.8
1984	600	115	5	120	0	95.7	22.5	5.3
1985	780	132	4	136	0	97.0	23.0	5.9
1986	830	134	5	139	0	96.1	23.5	5.9
1987	838	135	5	140	0	96.5	24.0	5.8
1988	727	116	5	121	0	96.2	24.5	4.9
1989	804	129	6	135	0	95.3	25.1	5.4
1990	892	147	4	151	0	97.5	25.6	5.9
1991	910	151	4	155	0	97.1	26.2	5.9
1992	850	137	5	142	0	96.6	26.7	5.3

1/ 1992 = ERS estimate.

2/ Production/consumption.

Sources: USDA, FAS, PS&amp;D database; FAO, Agrostat database.

Table 22--Turkey: Beef, veal, and buffalo meat indicators

Year	Total slaughter	Production	Imports	Consumption	Ending stocks	Self-sufficiency ratio 1/	Population	Per capita consumption
	1,000 head	-----1,000 tons-----				Percent	Million	Kilograms
1980	3,196	200	0	205	10	97.6	45.1	4.5
1981	3,632	201	0	200	9	100.5	46.2	4.3
1982	3,800	210	0	197	10	106.6	47.3	4.2
1983	4,000	220	0	202	15	108.9	48.4	4.2
1984	4,100	225	0	217	10	103.7	49.6	4.4
1985	4,200	230	37	243	30	94.7	50.7	4.8
1986	4,250	235	24	260	28	90.4	51.9	5.0
1987	4,300	245	23	265	30	92.5	53.1	5.0
1988	4,350	255	12	276	20	92.4	54.3	5.1
1989	4,400	270	7	281	15	96.1	55.5	5.1
1990	4,500	285	10	294	15	96.9	56.7	5.2
1991	4,300	290	25	310	20	93.5	57.9	5.4
1992	4,400	295	20	312	23	94.6	59.2	5.3

1/ Production/consumption.

Sources: USDA, FAS, PS&amp;D database; April 1993.

producers as the country enters its second consecutive year of drought.

Red meat is an important commodity in Morocco. Beef and veal consumption constitute 40 percent of local meat intake. Per capita intake remained steady at 5.9 kilos during the 1980-1992 period. The country is virtually self-sufficient in beef.

The government currently protects domestic beef producers with a 45-percent customs duty restriction on meat and live-stock imports through import licensing. Imports are also subject to an ad valorem tax of 12.5 percent. Meat imports are expected to be liberalized in 1993. The growing popularity of Western-style fast food restaurants may increase import demand under a liberalized trade regime.

### *Turkey's Beef Output at Record Level*

Beef output reached a record 295,000 tons in 1992 as the sector recovered from a rinderpest outbreak that reduced slaughter 4 percent the previous year (table 22). Between 1980 and 1992, beef production grew at an annual rate of 3.5 percent. However, this increase was maintained largely through continued yearly inventory reductions and increased imports of feeder cattle from Eastern Europe.

The Turkish Government supports the beef sector with a number of production incentives, including low-interest loans to farmers, the purchase of cattle at guaranteed support prices, and an export subsidy of \$200 per ton--up to 20 percent of total export value. Early in 1992, the government announced additional support measures for cattle feeders and packers. These incentives included increased credit for cattle

purchasing and feeding, reduced import charges for cattle imports, feed subsidies, and discounted veterinary services.

In 1992, per capita beef consumption declined to 5.3 kilos, due primarily to the rinderpest outbreak that frightened consumers and increased real prices 30 percent. Beef accounted for 31 percent of total meat intake in 1992, compared with 37 percent for lamb, mutton, and goat and 33 percent for poultry.

The government protects domestic beef producers with export subsidies and import controls. Beef imports are restricted to

quarter and half carcasses and are subject to an import surcharge of \$1,300 per ton, a 44-percent increase from 1991. Beef imports are also subject to a customs duty of 1 percent ad valorem. Despite these restrictions, in the near term, imports are expected to account for an increasing share of consumption as domestic herds continue to be depleted through inventory reductions, and as population and income growth fuel demand. Exports are expected to remain below 1,000 tons due to competition from the EC. In 1991, Iran, the FSU, and Northern Cyprus were Turkey's primary beef markets.

## Increased Urbanization Drives Dairy Demand

*Per capita dairy output continued its steady decline as domestic production failed to keep pace with rapid population growth. Imports are increasingly important as demand for milk, cheese, and other dairy products grows, particularly in urban areas. Large-scale commercial expansion of the dairy industry is limited by high capital costs and feed availability. [Linda Scott]*

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The NAME region produced nearly 17 million tons of fluid milk in 1992 (table 23). Cheese production reached a record level, while butter output remained steady (table 24). Turkey, Iran, and Syria produced 76 percent of the Middle East's milk output (fig. 33). In North Africa, Egypt, the largest producer, had a 43 percent share. Cheese production is concentrated in Iran, Turkey, and Egypt. Butter is not widely produced on a commercial basis.

Cow's milk accounted for nearly 60 percent of total milk output in 1992 (table 25). Water buffalo milk is widely produced in Egypt, where it is preferred for its high fat content. Sheep and goats accounted for nearly 40 percent of total milk output in the Middle East and for most of the milk produced in Jordan, Yemen, and the Gulf States. These countries have few, if any, cattle inventories (appendix table 36).

Dairy production in the region stagnated for the second straight year in 1992. Between 1980 and 1992, milk production grew at a sluggish annual rate of 0.48 percent in the Middle East and 1.9 percent in North Africa (table 26). Sharp declines in Kuwait and Iraq, as a result of the Gulf War, and a rinderpest outbreak in Turkey, were largely responsible for the drop. Among the large producers, growth was most rapid in North Africa, led by Algeria and Morocco. Per capita dairy output declined steadily between 1980 and 1992 as domestic production failed to keep pace with rapid population growth (fig. 34 and 35). The decline was most significant in the Middle East, where output dropped from a high of 82 kilos in 1980 to just over 60 kilos in 1992.

Most milk in the region is produced on small farms in traditional production systems linked with crop and livestock operations. With the exception of Saudi Arabia, where the industry is modern and highly commercialized, large-scale

commercial milk production is uncommon in the region. Many countries are ill-equipped to finance the high capital costs and infrastructure essential to support this type of production. Output is also affected by poor feed quality and availability, poor animal health, and inferior genetic quality. Most small producers are not financially able to upgrade herds with modern techniques such as artificial insemination and embryo transplants.

In some of the region's larger production centers, including Egypt, decreased demand for animal labor and increased urban demand for dairy products have begun to encourage small producers to expand milk production. However, the process is slow and will continue to be limited by resource constraints.

Milk and other dairy products are important commodities in the region, especially in urban areas. Production incentives include import restrictions, rebates for veterinary expenditures, reduced interest rates for capital investments, and subsidized imports of high-performance breeding cattle and bull semen. Many countries rely on imports of dry and concentrated milk for processing into other dairy products. Because fresh milk is often not easily transported, local production capacity is more important for milk than for some other commodities.

Most governments are trying to improve milk supplies in urban areas by increasing the percentage of milk that is marketed commercially. These measures include artificially high, guaranteed support prices for producers who sell to government or commercial dairy plants, marketing improvements such as installing milk collection centers in villages, and improvements in feed quality and veterinary extension services.



Table 23--North Africa and the Middle East: Milk indicators

Year	Production	Imports 1/				Food use 3/	Exports	Non-food use 4/	Self-sufficiency ratio 5/	Population	Per capita consumption
		Fresh	Dry	Concentrate	Total 2/						
-----1,000 tons-----									Percent	Million	Kilograms
1980	14,949	58	319	288	4,092	14,672	9	4,360	101.9	227.5	64.5
1981	15,434	60	407	296	5,051	15,845	5	4,635	97.4	234.8	67.5
1982	15,344	52	385	282	4,783	15,782	1	4,344	97.2	242.1	65.2
1983	15,470	45	419	357	5,294	16,301	2	4,461	94.9	249.2	65.4
1984	14,798	95	499	356	6,199	16,661	6	4,330	88.8	256.7	64.9
1985	15,320	69	486	373	6,070	16,946	9	4,435	90.4	264.2	64.1
1986	15,705	48	435	260	5,271	16,485	9	4,482	95.3	273.7	60.2
1987	15,804	54	497	148	5,709	17,051	9	4,453	92.7	281.5	60.6
1988	16,262	53	529	166	6,091	17,657	14	4,682	92.1	289.7	61.0
1989	16,481	45	495	148	5,679	17,483	15	4,662	94.3	298.1	58.6
1990	16,665	42	451	139	5,181	17,144	19	4,683	97.2	306.4	55.9
1991	16,601	42	491	146	5,629	17,426	23	4,782	95.3	312.3	55.8
1992	16,597	40	520	156	5,957	17,877	2	4,675	92.8	321.6	55.6

1/ 1992 = ERS estimate.

2/ Skim solids basis.

3/ Includes fluid milk and manufactured dairy products.

4/ Includes feed, industrial use and waste.

5/ Production/consumption.

Sources: USDA, FAS, PS&amp;D database, April 1993; USDA, ERS; FAO, Agrostat database.

Table 24--North Africa and the Middle East: Cheese and butter market

Year	Production	Imports 1/	Consumption	Ending stocks	Self-sufficiency ratio 2/	Population	Per capita consumption
<hr/>							
Cheese	-----1,000 tons-----				Percent	Million	Kilograms
1980	695	196	890	2	78.1	227.5	3.9
1981	708	217	923	2	76.7	234.8	3.9
1982	728	211	935	2	77.8	242.1	3.9
1983	750	234	985	3	76.2	249.2	4.0
1984	741	284	1039	18	71.4	256.7	4.0
1985	748	299	1062	19	70.4	264.2	4.0
1986	760	229	1002	20	75.8	273.7	3.7
1987	775	221	1008	18	76.9	281.5	3.6
1988	750	236	997	19	75.2	289.7	3.4
1989	791	243	1038	18	76.1	298.1	3.5
1990	803	242	1054	18	76.2	306.4	3.4
1991	786	238	1036	19	75.9	312.3	3.3
1992	804	246	1063	19	75.6	321.6	3.3
<hr/>							
Butter	-----1,000 tons-----				Percent	Million	Kilograms
1980	217	258	466	0	46.5	227.5	2.0
1981	223	261	481	0	46.4	234.8	2.0
1982	211	216	427	0	49.4	242.1	1.8
1983	216	286	501	0	43.0	249.2	2.0
1984	210	255	464	0	45.3	256.7	1.8
1985	216	310	526	0	41.1	264.2	2.0
1986	220	224	443	0	49.6	273.7	1.6
1987	225	264	488	0	46.2	281.5	1.7
1988	231	237	466	0	49.6	289.7	1.6
1989	235	254	485	0	48.4	298.1	1.6
1990	234	265	497	0	47.2	306.4	1.6
1991	235	230	454	0	51.7	312.3	1.5
1992	234	228	458	0	51.1	321.6	1.4

1/ 1992 = ERS estimate.

2/ Production/consumption.

Sources: USDA, FAS, PS&amp;D database, April 1993; FAO Agrostat database.

Table 25--North Africa and the Middle East: Milk production, by type, 1988-92 average

Region/country	Milk output					Percent of total			
	Total	Cow	Sheep	Goat	Buffalo	Cow	Sheep	Goat	Buffalo
	-----1,000 tons-----					-----Percent-----			
Middle East	11,653	6,882	2,777	1,715	280	59.1	23.8	14.7	2.4
Bahrain	19	19	0	0	0	100.0	0.0	0.0	0.0
Cyprus	139	97	20	22	0	70.0	14.5	15.5	0.0
Iran	3,159	1,395	792	883	89	44.2	25.1	28.0	2.8
Iraq	537	279	163	70	25	51.9	30.4	13.1	4.6
Israel	1,004	970	17	17	0	96.6	1.7	1.7	0.0
Jordan	75	37	25	13	0	49.5	33.4	17.1	0.0
Kuwait	33	32	0	1	0	97.6	0.0	2.4	0.0
Lebanon	133	94	14	26	0	70.5	10.2	19.3	0.0
Oman	74	18	1	55	0	24.2	1.6	74.2	0.0
Qatar	21	3	16	2	0	16.0	74.5	9.4	0.0
Saudi Arabia	302	225	40	37	0	74.4	13.2	12.4	0.0
Syria	1,343	784	493	65	1	58.3	36.7	4.9	0.1
Turkey	4,472	2,825	1,127	354	165	63.2	25.2	7.9	3.7
UAE	24	5	5	14	0	20.7	19.8	59.5	0.0
Yemen	316	98	62	156	0	31.0	19.7	49.2	0.0
North Africa	4,734	2,960	311	210	1,253	62.5	6.6	4.4	26.5
Algeria	981	640	215	126	0	65.3	21.9	12.9	0.0
Egypt	2,093	817	7	17	1,253	39.0	0.3	0.8	59.8
Libya	205	137	48	20	0	66.6	23.5	9.9	0.0
Morocco	1,032	969	27	37	0	93.9	2.6	3.6	0.0
Tunisia	423	398	14	11	0	94.1	3.4	2.5	0.0

Sources: USDA, FAS, PS&D database, April 1993; FAO, Agroatat database.

Figure 33

**NAME Fluid Milk Production, 1992**

Million tons

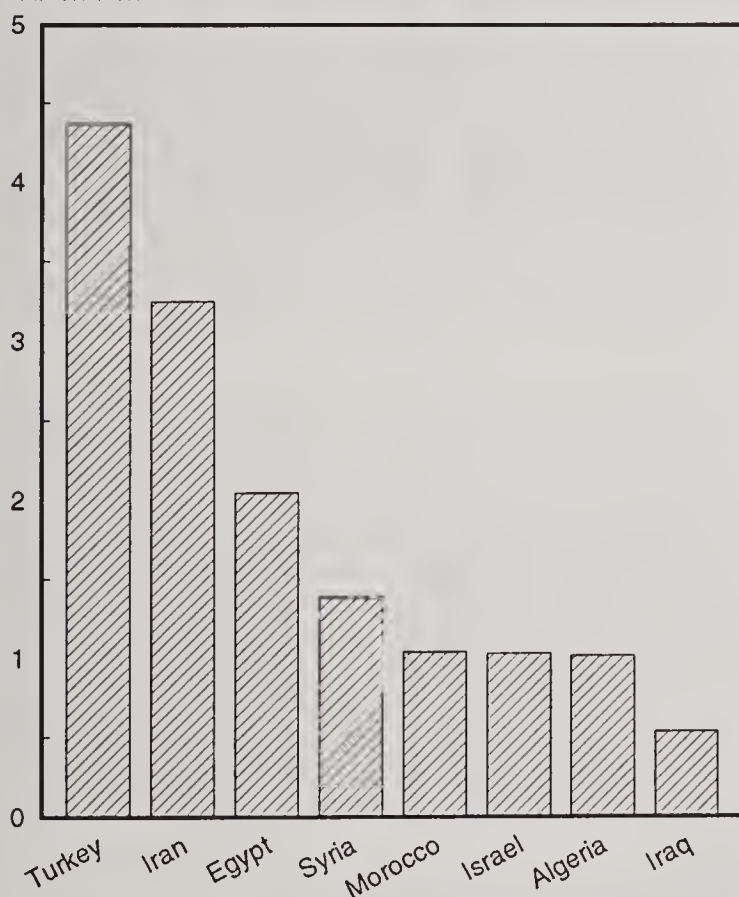


Table 26--Annual growth rates for NAME milk, 1980-92

Country/ region	Production	Imports	Consumption
Percent			
Middle East	0.48	-0.69	0.07
Bahrain	11.53	4.42	6.12
Cyprus	6.38	-2.23	5.14
Iran	2.56	-70.59	0.87
Iraq	-0.92	-8.29	-3.42
Israel	2.94	0.09	0.72
Jordan	5.20	2.51	3.28
Kuwait	-6.93	-5.07	-5.32
Lebanon	1.02	-1.82	-0.26
Oman	6.63	2.37	3.84
Oatar	12.84	1.88	3.96
Saudi Arabia	2.35	4.27	3.70
Syria	2.61	-10.04	2.56
Turkey	-1.98	32.02	-2.40
UAE	5.58	2.98	3.20
Yemen	0.71	0.13	0.43
North Africa	1.88	5.08	4.15
Algeria	1.59	8.78	6.12
Egypt	0.97	-2.96	2.57
Libya	5.60	-2.90	1.15
Morocco	2.36	4.30	2.58
Tunisia	5.18	-0.73	2.95

Source: USDA, ERS calculations.



Figure 34

### Per Capita Milk Production and Consumption in the Middle East, 1980-92

Kilograms

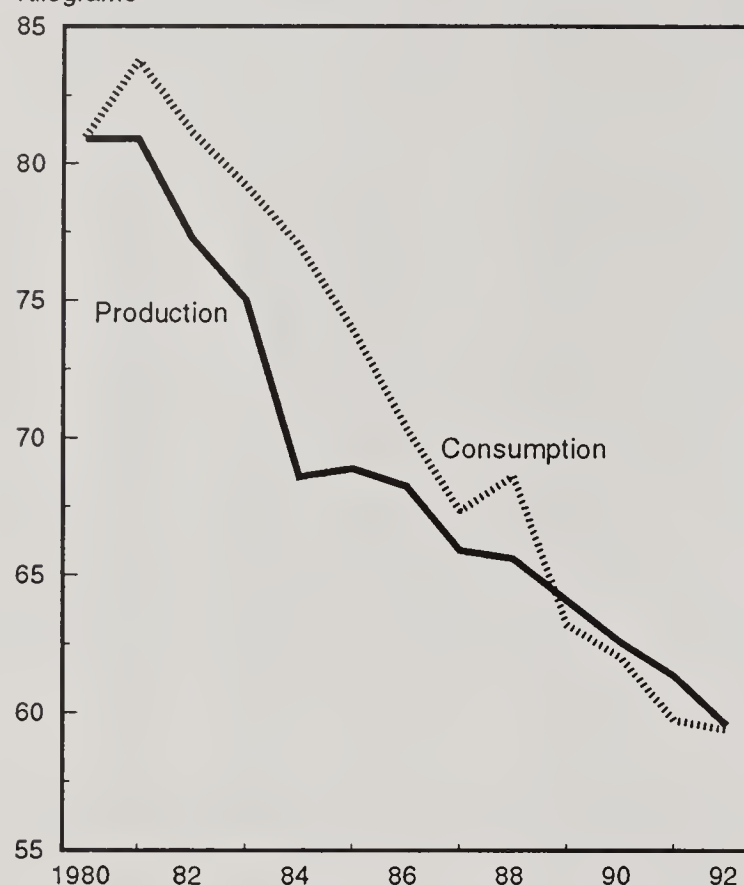
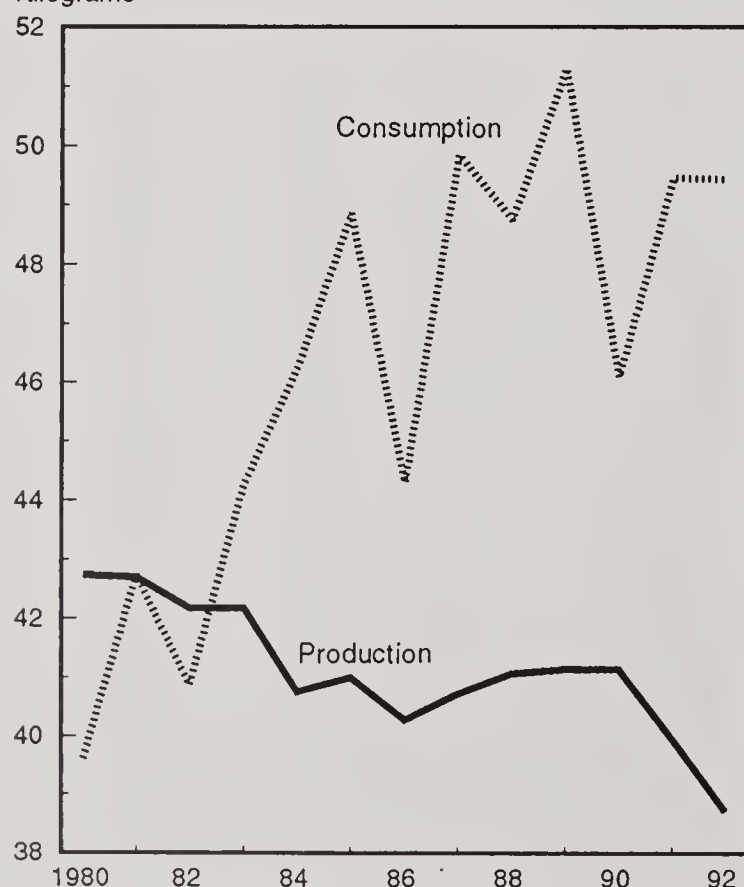


Figure 35

### Per Capita Milk Production and Consumption in North Africa, 1980-92

Kilograms



### Milk and Dairy Product Consumption Relatively Low

Milk and dairy products provide a relatively small percentage of total calories in the region. In 1990, the latest year data are available, dairy consumption was less than 5 percent of total calorie intake (appendix table 35). Consumption is low, relative to Western standards, with dairy products accounting for nearly 7 percent of total intake in the United States and in Europe.

Per capita consumption of fluid milk in NAME in 1992 was estimated at 56 kilos. Consumption was slightly higher in the Middle East due to high intake in Israel and the Gulf States. The lowest consumption was in Egypt, where consumer acceptance of fluid milk is low (fig. 36). The majority of the region's milk output is consumed fresh, with on-farm consumption as high as 80 percent in some countries. In 1992, cheese consumption in the region was just over 5 percent of total dairy intake, as consumption is somewhat limited to more affluent households. Per capita butter consumption was generally under 2 kilos, with the exception of the Gulf States and Egypt where it is preferred to vegetable oils. Butter ghee, in which butter is processed at home to extend shelf life, is an important commodity for lower-income households that often lack adequate refrigeration.

Per capita milk consumption in the region has declined steadily since peaking at 68 kilos in 1981. The drop was most dramatic in the Middle East, where per capita intake declined more than 20 kilos between 1980 and 1992. In contrast, per capita intake increased sharply in Algeria because of rapid growth in milk imports, aggressive government production incentives, and large consumer subsidies.

Several factors may explain the Middle East's declining dairy consumption. In the middle-income countries, the decline has resulted from stagnant domestic output, rising dairy prices, and decreased consumer purchasing power.<sup>1</sup> In the high-income countries, such as Israel, Saudi Arabia, and the Gulf States, dairy intake may be reaching a saturation point, with per capita consumption approaching Western levels. Consumer-ready and high-value products already account for a major share of the food market in these countries.

The NAME region imported 5.9 million tons of milk products, and close to half a million tons of cheese and butter in 1992.<sup>2</sup> Imports of fresh and powdered milk and milk concentrates accounted for 60 percent of total dairy imports, while cheese and butter each held about a 20-percent share. Algeria, Saudi Arabia, and the Gulf States were the largest importers of powdered milk. Most is used for processing into other-dairy-products category, such as yogurt, cheese, and ice cream (fig. 37). Cheese and butter imports were concentrated in Iran, Egypt, and Saudi Arabia. Iran's cheese imports have increased more than a third since the end of the Iraq-Iran War and accounted for nearly 40 percent of the region's cheese imports in 1992.

<sup>1</sup> See table 9 on per capita poultry consumption.

<sup>2</sup> Skim solids basis.

Imports provided slightly more than 25 percent of the NAME region's milk supply in 1992.<sup>3</sup> This figure has remained relatively stable since peaking at 30 percent in 1984. In the Middle East, self-sufficiency was lowest in Jordan and the Gulf States, where land resources limit livestock production. Import dependence was also high in Saudi Arabia, where imports are important to the food-processing industry. Imports were significantly more important in North Africa because of Algeria's low self-sufficiency ratio. Between 1980

<sup>3</sup> Skim solids basis.

Figure 36

### NAME Per Capita Dairy Consumption, 1992

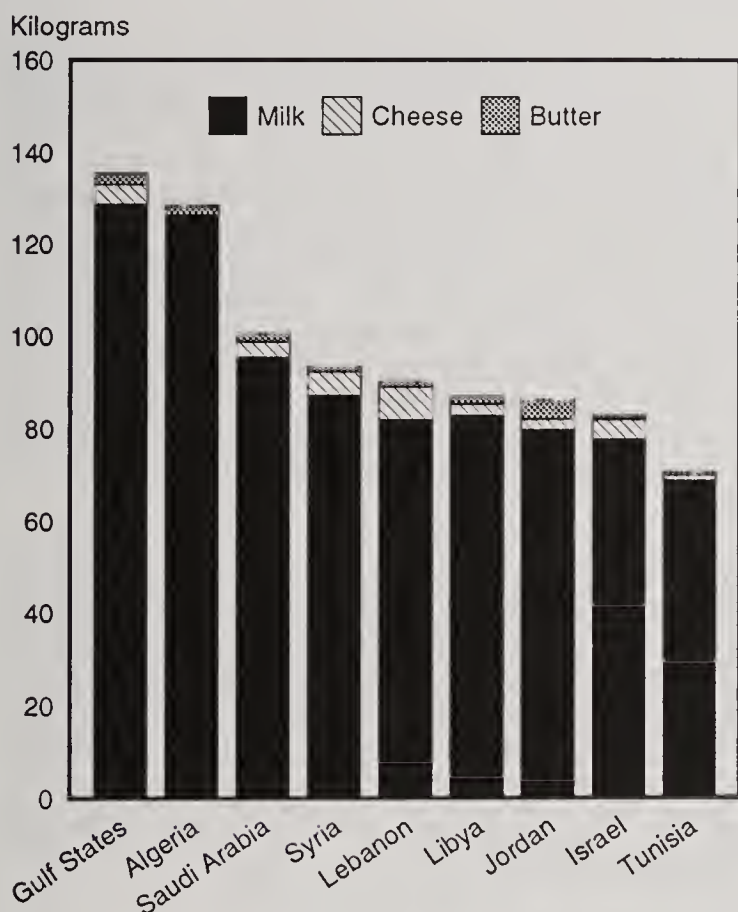
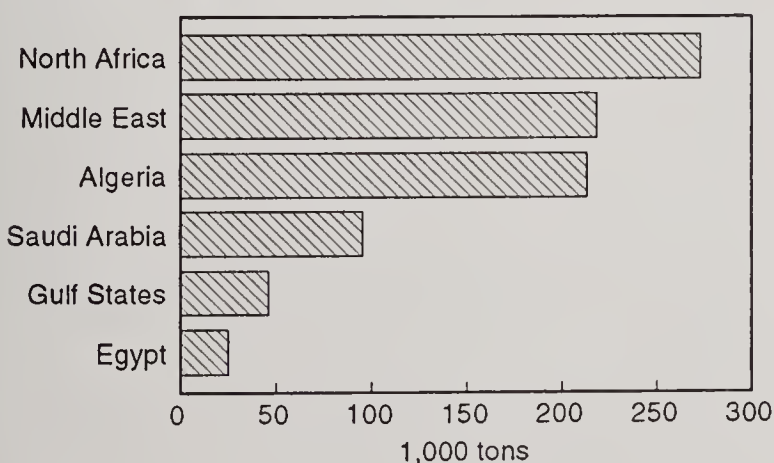


Figure 37

### NAME Dry Milk Imports, 1991



and 1992, Algeria's imports of powdered milk and milk concentrates grew more than 200 percent, a result of relatively high prices for meat that discouraged domestic dairy production.

The EC is the NAME region's major supplier of dairy products. The United States accounts for a smaller percentage.

Table 27--U.S. dairy exports to NAME, 1988-92

Commodity/ country	1988	1989	1990	1991	1992
Tons					
<b>BUTTER 1/</b>					
Middle East	5,743	4,604	2,846	0	269
Iraq	5,743	4,525	2,827	0	0
North Africa	0	0	0	3,493	6,340
Algeria	0	0	0	1,588	6,340
Egypt	0	0	0	1,905	0
<b>CHEESE</b>					
Middle East	10,017	325	1,977	312	481
Iraq	9,802	222	1,675	0	0
Saudi Arabia	0	79	19	0	152
North Africa	8,046	600	0	10	1,314
Algeria	8,046	600	0	0	1,003
<b>EVAPORATED AND CONDENSED MILK</b>					
Middle East	1,351	54	34	157	80
Saudi Arabia	982	23	34	157	80
North Africa	0	0	0	0	2,037
Algeria	0	0	0	0	2,037
<b>NONFAT DRY MILK</b>					
Middle East	14,074	5,380	2,012	125	852
Iraq	12,984	2,780	553	0	0
Kuwait	442	2,572	1,439	0	0
Saudi Arabia	244	0	0	124	702
North Africa	14,190	0	0	4,500	5,208
Algeria	9,017	0	0	4,500	3,600
Morocco	4,035	0	0	0	1,308
<b>WHEY</b>					
Middle East	282	239	341	245	928
Israel	178	72	209	109	328
Saudi Arabia	56	40	36	0	520
<b>OTHER DAIRY 2/</b>					
Middle East	3,904	1,350	2,334	2,936	6,096
Saudi Arabia	204	405	236	2,030	4,236
North Africa	25	21	5,012	4,000	5,881
Algeria	0	0	5,000	92	5,000

1/ Includes butter oil and anhydrous milkfat.

2/ Includes full-fat dry milk powder, ice cream, yogurt and other dairy products.

Source: USDA, ERS, FATUS, calendar years, database.



Table 28--Bonus award allocations for NAME countries under U.S. Dairy Export Incentive Program (DEIP), 1993

Country/ commodity	Bonus award allocation
	Tons
MILK POWDER 1/	77,500
Algeria	25,000
Egypt	5,000
Israel	2,000
Gulf states 2/	5,000
Jordan	3,000
Morocco	2,000
Saudi Arabia	10,000
Tunisia	0
Turkey	1,500
Yemen	24,000
BUTTERFAT	24,600
Algeria	5,000
Egypt	5,000
Gulf states	5,000
Israel	200
Jordan	1,000
Lebanon	2,900
Saudi Arabia	2,500
Tunisia	1,000
Turkey	500
Yemen	1,500
CHEESES	5,300
Algeria	2,000
Egypt	1,500
Gulf states	1,000
Jordan	100
Morocco	100
Saudi Arabia	500
Turkey	100
TOTAL DEIP	107,400

1/ Includes non-fat and full-fat.

2/ Bahrain, Kuwait, Oman, Qatar, and UAE.

Source: U.S. Dairy, Livestock and Poultry Trade,  
Featuring: January-December 1992 Data,  
USDA, Foreign Agricultural Service,  
Circular Series: FDLP 2-93, March 1993.

North Africa was a significantly more important market for American dairy exporters than the Middle East. In 1992, the United States exported 8,700 tons of cheese, butter, nonfat dry milk, and other dairy products to the Middle East, while shipments to North Africa exceeded 20,000 tons (table 27). Algeria accounted for 87 percent of the North Africa total, while Saudi Arabia was both the largest and the fastest growing U.S. market in the Middle East. Other dairy products, including yogurt, cream, full-fat dry milk, and ice cream dominated U.S. shipments to both countries.

Between 1988 and 1992, U.S. exports to the Middle East declined more than 75 percent, due largely to the loss of the Iraqi market, which had accounted for 84 percent of U.S. dairy exports to the region in 1988. Shipments to North Africa fell less than 7 percent, after declining sharply in 1989 and 1990.

The USDA Dairy Export Incentive Program (DEIP) helps exporters compete in the region by providing cash bonuses to U.S. dairy exporters. Milk powder, butterfat, and a variety of cheeses (including cheddar, feta, gouda, cream, mozzarella, and processed American cheeses), are eligible for bonuses under the program which began in 1987. The 20 countries of the NAME region are important targets of the DEIP program. U.S. exporters were allocated bonus awards for 107,400 tons of dairy products for NAME countries for the program period ending December 1993 (table 28). Milk powder accounted for the largest share of the awards, followed by butterfat and cheeses. Nearly 95 percent of DEIP bonuses for cheese exports were allocated to countries in the NAME region.

GSM-102 has also been used by U.S. dairy exporters to penetrate the NAME market. Between 1988 and 1991, more than 375,000 tons of dry milk powder and butter oil, valued at \$62 million dollars, were shipped to the region using GSM-102 credit guarantees. However, these shipments fell dramatically following the departure of Iraq from the program in 1989. U.S. food aid shipments of nonfat dry milk powder under the P. L. 480 program were important in Egypt and Morocco in the mid-1980's, however, these shipments ended in 1988 when CCC inventories were depleted.

# Consumption of Oilseeds and Products Continues To Rise

*Consumption of vegetable oils and meals outpaced production, resulting in rapidly increasing imports. Oilmeal imports rose an average of 18 percent annually during the 1980-92 period, while vegetable oil imports rose an average of 15 percent annually during the same period. Self-sufficiency in both commodities declined sharply. Growth in demand for vegetable oils is expected to correspond with continued population growth during the 1994-98 period. Slowed expansion in the livestock and poultry sectors, combined with sharply reduced feed subsidies, will contribute to reduced rates of growth in oilmeal consumption. [Michael E. Kurtzig and Shahla Shapouri]*

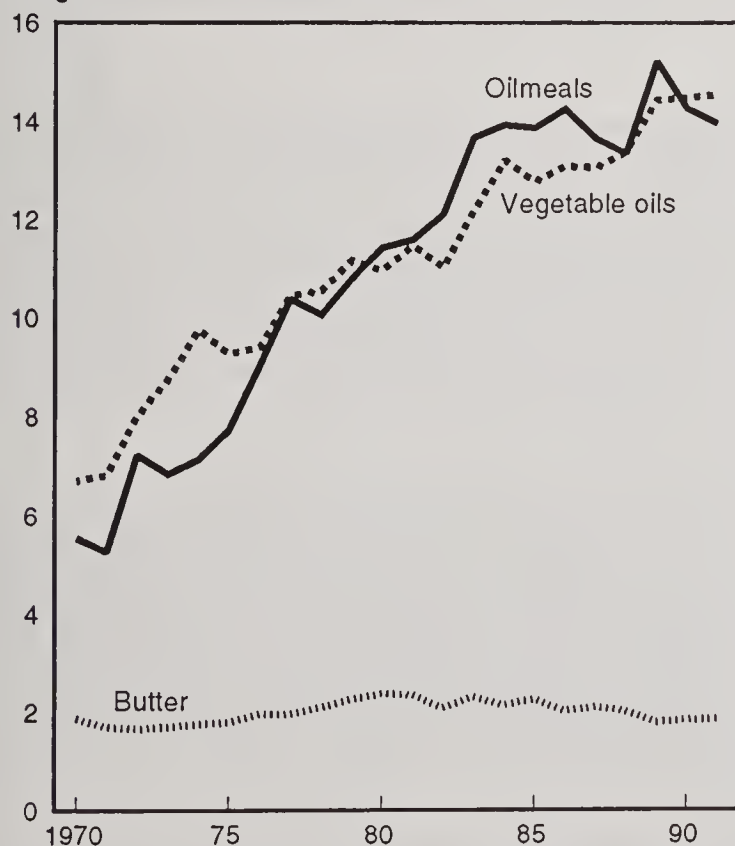
## Shifting Consumer Preferences Drive Vegetable Oil Demand, Meal Imports Rise With Livestock Development

The NAME countries are traditional consumers of oils and products but only in the last two decades has consumption of vegetable oils and meals accelerated. Previously, butter and animal oils, primarily from mutton, lamb, and goats, comprised the major portion of oil consumption. Since 1970, rising prices of animal-based fats, the availability of relatively cheaper vegetable oils, and more recently, health concerns over fat and cholesterol, have increased vegetable oil consumption (fig. 38).

Figure 38

### NAME Per Capita Consumption of Oilmeals, Vegetable Oils, and Butter, 1970-91

Kilograms



Between 1980 and 1992, NAME per capita intake of vegetable oils, including palm, soybean, sunflowerseed, olive, and cottonseed oils, increased from a range of 10 to 12 kilos to 15 kilos annually (table 29). Per capita consumption in many countries now exceeds that of the United States, where salad and cooking oil consumption was 11.4 kilos in 1991. Total NAME vegetable oil consumption reached 4.7 million tons in 1992.

A combination of income growth and policies aimed at increasing poultry and red meat consumption caused annual consumption of oilmeals, primarily soymeal, to rise 72 percent in the Middle East and 84 percent in North Africa since 1980 (table 30). Rising per capita meal consumption, combined with regional population growth, translated into a 13-percent annual increase in meal demand between 1980 and 1992.

## Demand Outstrips Production

The Middle East's leading producers of oilseeds and oilseed products are Turkey, Iran, Syria, and Israel. Egypt and Morocco lead North African output. The major oilseeds are cottonseed, sunflowerseed, and soybeans. NAME oilseed production in 1992 reached 3.8 million tons, a small increase from 3.3 million tons in 1980 (table 31). Domestic production is constrained by limited water and land resources, and in most countries, domestic production costs are often higher than import costs. In Turkey, a vast irrigation scheme is under construction which is expected to substantially increase cotton and oilseeds output over the next decade.<sup>1</sup>

NAME produced 1.4 million tons of vegetable oil in 1992, approximately 2.3 percent of global output.<sup>2</sup> Olive oil, traditionally the most important vegetable oil in the region, accounted for 33 percent of the total, with sunflower oil accounting for 35 percent. NAME oilmeal output reached 2 million tons in 1992. NAME oil and meal output stagnated during the 1980's, growing by less than 1 percent annually from 1980 to 1992. This is partly because oilseed products are imported and sold cheaply by government agencies.

<sup>1</sup> See box on Southeastern Anatolian Irrigation Project (GAP).

<sup>2</sup> See circular on World Oilseed Situation and Outlook, FOP-7 92, USDA/FAS, p. 17.



Table 29--North Africa and the Middle East vegetable oils market

Country/ year	Amount crushed	Extrac- tion rate	Produc- tion	Imports	Exports	Consump- tion	Ending stocks	Food use	Self- suffi- ciency ratio 1/	Population	Per capita consumption
Middle East	1,000 tons	Percent	-----1,000 tons-----					Percent	Million	Kilograms	
1980	2,549	0.32	823	837	145	1,415	209	1,407	58.2	136.9	10.3
1981	2,387	0.27	651	1,099	209	1,611	139	1,570	40.4	141.6	11.4
1982	2,417	0.34	818	1,031	160	1,664	164	1,575	49.2	146.4	11.4
1983	2,571	0.27	688	1,241	143	1,842	108	1,756	37.4	151.1	12.2
1984	2,809	0.28	797	1,431	146	2,067	123	1,960	38.6	156.0	13.2
1985	2,596	0.27	710	1,307	51	2,003	86	1,887	35.4	161.1	12.4
1986	2,783	0.33	911	1,485	80	2,279	123	2,163	40.0	167.7	13.6
1987	2,751	0.28	781	1,549	95	2,237	121	2,101	34.9	172.8	12.9
1988	2,781	0.31	859	1,771	138	2,403	210	2,274	35.7	178.4	13.5
1989	3,248	0.30	982	1,956	214	2,693	241	2,509	36.5	184.1	14.6
1990	3,078	0.32	975	1,995	206	2,705	300	2,492	36.0	189.7	14.3
1991	2,612	0.28	727	2,080	199	2,739	169	2,534	26.5	192.9	14.2
1992	3,055	0.31	954	2,247	219	2,931	220	2,714	32.5	199.4	14.7
North Africa											
1980	959	0.38	367	795	67	1,078	30	1,062	34.0	90.6	11.9
1981	961	0.32	303	824	50	1,082	25	1,066	28.0	93.2	11.6
1982	966	0.28	266	819	41	1,008	61	973	26.4	95.8	10.5
1983	908	0.41	369	927	66	1,192	99	1,156	31.0	98.3	12.1
1984	845	0.36	301	1,077	55	1,326	96	1,275	22.7	100.8	13.1
1985	902	0.34	307	1,117	41	1,374	105	1,303	22.3	103.4	13.3
1986	932	0.36	336	1,029	57	1,309	104	1,268	25.7	106.3	12.3
1987	811	0.38	305	1,202	57	1,447	107	1,303	21.1	109.0	13.3
1988	781	0.37	291	1,240	52	1,481	105	1,275	19.6	111.7	13.3
1989	745	0.49	365	1,338	85	1,616	107	1,365	22.6	114.4	14.1
1990	880	0.47	414	1,422	68	1,741	134	1,478	23.8	117.1	14.9
1991	804	0.44	355	1,507	72	1,809	115	1,545	19.6	119.9	15.1
1992	783	0.51	398	1,463	85	1,783	108	1,528	22.3	122.7	14.5

1/ Production/consumption.

Source: USDA, FAS, PS&amp;D database, April 1993.

### Import Dependency Rises

As growth in consumption of vegetable oils and meals outpaced production gains, NAME rapidly increased its oil and meal imports. Oilmeal imports rose an average of 18 percent annually during the 1980-92 period, while oil imports rose at a 15-percent annual-average rate during that period. As imports and consumption rose, self-sufficiency in both vegetable oils and meals declined sharply. Imports provided more than three-fourths of the vegetable oil consumed in the Middle East in 1992 and 82 percent of total intake in North Africa--compared to 59 and 74 percent respectively in 1980. Because crushing capacity has not expanded, a decided shift toward the import of oilseed products, rather than oilseeds, has occurred. In fact, NAME oilseed imports declined by nearly 8 percent from 1980 to 1992, to 638,000 tons in 1992.

The region's leading oil and meal importers are Saudi Arabia, Iran, Algeria, Egypt, and Turkey. Iraq was a major importer of meal and oil prior to the Gulf War. Meal imports were 313,000 tons in 1989. However, Iraq's poultry sector has been decimated in the past 3 years, and 1992 imports were estimated at one-sixth the 1989 level. Likewise, Iraqi vege-

table oil imports were in the 300,000-ton range prior to the Gulf War and were down sharply thereafter.

Soymeal is the major oilmeal imported by the region, with an 86-percent share in the Middle East and a 91-percent share in North Africa in 1992. Soybean oil is the major vegetable oil imported by the region, followed by palm oil. The region's major oil and meal suppliers are the United States, the EC, Brazil, and Argentina.

### Outlook Is for Slower Import Growth

Demand for oilseeds and products in NAME is strong and is expected to continue to grow, however at a slower pace than in the past decade. Growth in demand for vegetable oils is expected to coincide with a continued population growth rate of 3 percent during the 1994-98 period. Per capita consumption is not expected to increase further, despite rising incomes, and could even decline as NAME consumers become more health conscious.

Slowed expansion in the livestock and poultry sectors, combined with sharply reduced feed subsidies and rising feed

Table 30--North Africa and the Middle East vegetable meals market

Country/ year	Amount crushed	Extrac- tion rate	Produc- tion	Imports	Exports	Consump- tion	Ending stocks	Feed use	Self- suffi- ciency ratio 1/	Population	Per capita consumption
<hr/>											
Middle East	1,000 tons	Percent	-----1,000 tons-----						Percent	Million	Kilograms
1980	2,547	0.53	1,353	530	35	1,825	44	1,825	74.1	136.9	13.3
1981	2,387	0.52	1,233	723	85	1,843	72	1,843	66.9	141.6	13.0
1982	2,417	0.51	1,227	710	22	1,930	57	1,928	63.6	146.4	13.2
1983	2,571	0.49	1,271	937	24	2,178	63	2,173	58.4	151.1	14.4
1984	2,809	0.51	1,432	917	24	2,310	78	2,305	62.0	156.0	14.8
1985	2,596	0.50	1,297	993	32	2,278	58	2,273	56.9	161.1	14.1
1986	2,783	0.52	1,443	1,014	9	2,452	54	2,447	58.8	167.7	14.6
1987	2,751	0.52	1,425	1,065	34	2,456	54	2,453	58.0	172.8	14.2
1988	2,777	0.51	1,418	1,041	55	2,402	56	2,399	59.0	178.4	13.5
1989	3,248	0.50	1,608	1,433	29	2,996	72	2,993	53.7	184.1	16.3
1990	3,078	0.51	1,561	1,288	19	2,813	89	2,810	55.5	189.7	14.8
1991	2,612	0.53	1,373	1,593	17	2,946	92	2,943	46.6	192.9	15.3
1992	3,055	0.52	1,580	1,575	19	3,136	92	3,133	50.4	199.4	15.7
<hr/>											
North Africa											
1980	958	0.53	508	289	25	774	0	774	65.6	90.6	8.5
1981	963	0.54	520	361	1	880	0	880	59.1	93.2	9.4
1982	966	0.57	554	460	10	1,003	1	1,003	55.2	95.8	10.5
1983	908	0.59	532	708	6	1,234	1	1,234	43.1	98.3	12.6
1984	845	0.58	487	785	0	1,272	1	1,272	38.3	100.8	12.6
1985	1,033	0.51	529	884	0	1,389	25	1,389	38.1	103.4	13.4
1986	1,080	0.51	556	880	4	1,451	6	1,451	38.3	106.3	13.7
1987	936	0.53	498	923	7	1,394	26	1,394	35.7	109.0	12.8
1988	940	0.53	495	1,000	2	1,474	45	1,474	33.6	111.7	13.2
1989	883	0.65	573	976	1	1,546	47	1,546	37.1	114.4	13.5
1990	999	0.61	611	966	4	1,568	52	1,568	39.0	117.1	13.4
1991	969	0.47	460	952	1	1,421	42	1,421	32.4	120.0	11.9
1992	939	0.47	441	983	1	1,428	37	1,428	30.9	122.7	11.6

1/ Production/consumption.

Source: USDA, FAS, PS&amp;D database, April 1993.

prices in many countries, will contribute to reduced rates of growth in oilmeal consumption. Demand for oilmeals is a function of its own price and its price relative to other meals and feeds, particularly corn. With feed price liberalization occurring across much of the region, the higher relative prices for oilmeals may increase substitution of less expensive feed ingredients such as corn. Still, in some countries governments are likely to continue to provide producers with some type of production incentives while subsidizing retail prices.

Exporter credit programs will continue to make imports of oils and meals more attractive and often cheaper than investment in indigenous production and crushing facilities. For the United States, credit programs have been instrumental in gaining market share. A substantial share of the Algerian market, recently, has been attributable to the Sunflower Oil Assistance Program (SOAP) and EEP, along with GSM financing. In Turkey, the U.S. GSM and EEP have increased the U.S. share in the vegetable oil market from almost zero in 1989 to 15 percent in 1992.

### ***Algeria Almost Totally Dependent on Vegetable Oil Imports***

With the exception of some 20,000 tons of olive oil, Algeria's production of oilseeds and products is negligible. The country is nearly totally dependent on imported vegetable oil. Sunflower and rapeseed oils are the primary oils consumed. Soybean oil and fish oil are also imported but in smaller quantities because of refining problems. Over the last decade, consumption of vegetable oils has risen dramatically at an annual rate of 6.6 percent. Current per capita consumption is 13 kilos. It is forecast to rise to 14.4 kilos early in the next century. Vegetable oil comprised 13 percent of the average Algerian's daily diet in 1990, compared with 11 percent a decade earlier. Import dependence will remain total in the foreseeable future. Algeria's major vegetable oil suppliers are the United States, Argentina and the EC. The United States has been able to acquire a substantial market share through its SOAP and EEP programs, along with GSM financing. In 1991, the United States became a major supplier, with vegetable oil sales to Algeria reaching 86,991 tons. In 1992, sales rose to 179,560



Table 31--North Africa and the Middle East: Oilseeds market

Year	Area har- vested	Yield	Produc- tion	Imports	Exports	Consump- tion	Ending stocks	Feed use	Food use	Amount crushed	Self- suffi- ciency ratio 1/	Popu- lation	Per capita consump- tion
Middle East	1,000 tons	Tons/ha	-----1,000 tons-----								Percent	Million	Kg
1980	1,825	1.24	2,268	588	18	2,903	136	272	82	2,549	78.1	136.9	21.2
1981	1,806	1.20	2,160	533	26	2,764	39	294	82	2,388	78.1	141.6	19.5
1982	1,803	1.25	2,258	620	21	2,792	104	297	78	2,417	80.9	146.4	19.1
1983	1,834	1.35	2,472	476	20	2,949	83	296	82	2,571	83.8	151.1	19.5
1984	2,030	1.27	2,584	628	18	3,216	61	308	99	2,809	80.3	156.0	20.6
1985	2,006	1.24	2,479	511	17	2,984	50	278	110	2,596	83.1	161.1	18.5
1986	1,961	1.36	2,672	472	13	3,136	45	243	110	2,783	85.2	167.7	18.7
1987	2,095	1.26	2,639	578	17	3,180	65	284	145	2,751	83.0	172.8	18.4
1988	2,148	1.43	3,068	477	22	3,224	364	289	160	2,775	95.2	178.4	18.1
1989	2,305	1.32	3,054	470	13	3,645	230	268	129	3,248	83.8	184.1	19.8
1990	2,070	1.38	2,854	488	20	3,477	75	271	128	3,078	82.1	189.7	18.3
1991	1,846	1.35	2,485	539	21	2,995	83	242	141	2,612	83.0	192.9	15.5
1992	2,030	1.43	2,903	567	21	3,458	74	267	136	3,055	84.0	199.4	17.3
North Africa													
1980	630	1.63	1,026	104	14	1,116	0	99	58	959	91.9	90.6	12.3
1981	613	1.69	1,033	115	12	1,121	15	99	59	963	92.1	93.2	12.0
1982	592	1.76	1,043	107	10	1,139	16	103	70	966	91.6	95.8	11.9
1983	563	1.67	938	105	4	1,038	17	76	54	908	90.4	98.3	10.6
1984	546	1.69	924	59	4	981	15	55	81	845	94.2	100.8	9.7
1985	594	1.60	951	90	5	1,036	15	56	78	902	91.8	103.4	10.0
1986	597	1.54	918	168	13	1,073	15	70	71	932	85.6	106.3	10.1
1987	590	1.47	867	104	5	968	13	67	90	811	89.6	109.0	8.9
1988	640	1.33	848	114	1	956	18	55	120	781	88.7	111.7	8.6
1989	647	1.34	869	83	1	953	16	90	118	745	91.2	114.4	8.3
1990	692	1.38	955	87	3	1,039	16	90	69	880	91.9	117.1	8.9
1991	622	1.40	871	86	5	952	16	86	62	804	91.5	119.9	7.9
1992	644	1.37	883	71	5	949	16	86	70	793	93.0	122.7	7.7

1/ Production/consumption.

Source: USDA, FAS, PS&amp;D database, April 1993.

tons, with 38 percent soybean oil and 57 percent sunflower oil. Cottonseed oil and peanut oil made up the rest.

### ***Meal Imports Underpin Poultry Expansion***

Algeria's development policy focuses on the expansion of the livestock sector, particularly poultry. Imported meals accounted for almost all of the 440,000-ton annual demand of the poultry sector. During the 1980's, poultry output expanded 12 percent per year, from 60,000 tons in 1980 to 265,000 tons by 1992. Egg production has also shot up dramatically. This rapid expansion was a result of Algeria's policy to develop a relatively inexpensive source of protein and enhance returns to producers.

Poultry is an increasingly significant source of food in Algeria. Output will continue to expand, although at a reduced rate, as policy reforms, introduced in 1989, dismantled price controls on feedstuffs in 1990. In addition, the Algerian dinar was rapidly devalued in late 1990, raising input costs, particularly for protein meals. Soybean imports will continue to rise, although at a somewhat-lower growth rate than in the 1980's (fig. 39)

The United States is a leading supplier of Algeria's oilmeals. In 1992, of an estimated 440,000 tons of meals imported, the U.S. supplied 247,802 tons. In that year, sales of U.S. oilseeds and products to Algeria accounted for 30 percent of the value of U.S. agricultural exports to that country.

While Algeria is self-sufficient in poultry meat and eggs, all inputs are imported. The key factors determining U.S. competitiveness in the Algerian market are GSM credit and price. The continuation of U.S. export promotion programs is expected to maintain or enhance the U.S. market share.

### ***Egypt's Vegetable Oil Self-Sufficiency Declines***

Egypt is a large producer and consumer of oilseeds and oilseed products, but it is also highly dependent on vegetable oil imports (table 32). Egypt's self-sufficiency in protein meals declined from 89 to 56 percent between 1980 and 1992, while import dependency for vegetable oils rose from 69 to 88 percent.

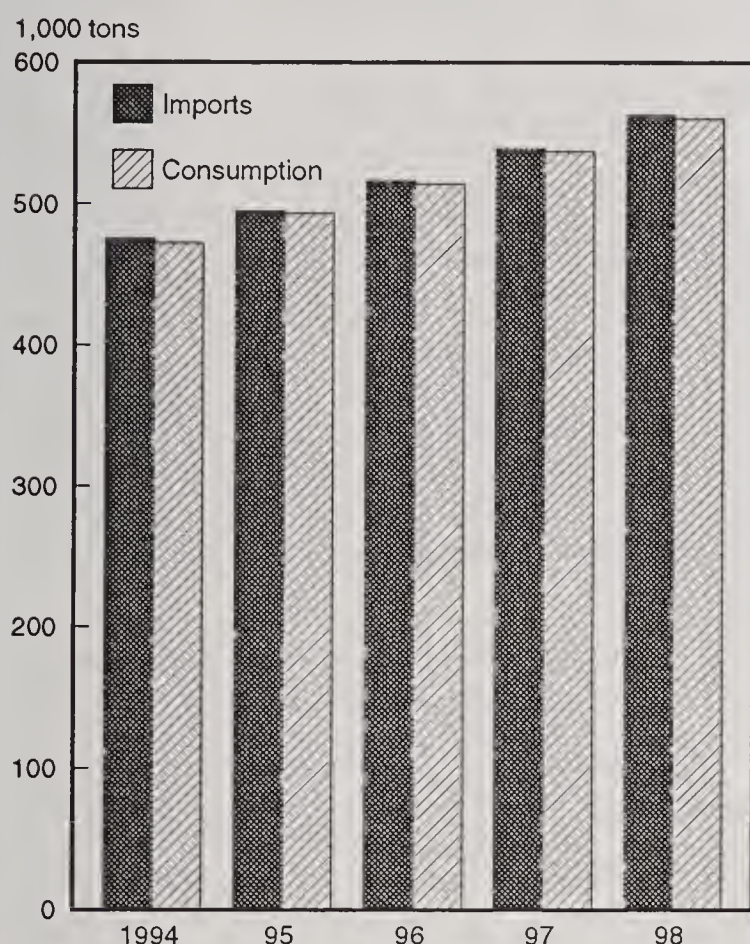
Import dependence is expected to increase because of population growth, rising per capita use (stemming from consumer

price subsidies), and changing consumer preferences for Western and fast foods. In addition, the slow growth in domestic output, the result of declining cottonseed production, will raise import demand. Argentina and Brazil are Egypt's chief vegetable oil suppliers, offering the lowest prices relative to

other exporting countries. The U.S. share has declined from 20 percent from 1984 to 1987 to 5 percent in 1990 and 1992. Soymeal accounts for the majority of Egypt's meal imports, which have declined in recent years as feed demand contracted along with the poultry sector (table 33). The removal of feed subsidies in 1988 doubled feed prices and reduced consumption. Simultaneously, imports of other protein feed supplements such as fish meal have increased.

Figure 39

**Algeria: Projected Soymeal Use, 1994-98**



Cotton and soybeans are the main oilseeds produced in Egypt. Expanded oilseed production is limited by land scarcity and low prices. For example, cotton is a government-controlled commodity produced primarily for its fiber. Egyptian cotton is a highly valued product on the world market and critical to the country's textile industry. The Egyptian Government controls cotton marketing and sets producer prices. But, because of inadequate incentives, cotton output has declined 17 percent in the last decade (a 34-percent decline from 1982 to 1992, but an increase of 16 percent in the last 2 years). Producer prices are deliberately kept below the world price and below the price of competing crops such as wheat (table 34). In 1992, the cotton price was increased 10 percent, but fell short of covering increased input costs.

Most input subsidies, particularly for fertilizer and credit, have been reduced since the late 1980's. The government continues to subsidize other inputs such as energy, pesticides, and irrigation water, but these inputs contribute to less than half of cotton's variable production costs.

Almost all domestic vegetable oils are processed by public crushing and refining facilities. Egypt has eight public sector companies with a crushing capacity of 600,000 tons for cottonseed and 300,000 tons for soybeans. Because of the decline in domestic oilseed output, the country's crushing capacity is underutilized. The refineries, however, operate at

Table 32--Egypt: Vegetable oils market

Year	Amount crushed	Extraction rate	Production	Imports	Exports	Consumption	Ending stocks	Food use	Self-sufficiency ratio 1/	Population	Per capita consumption
	1,000 tons	Percent	-----1,000 tons-----						Percent	Million	Kg
1980	860	0.17	142	312	0	454	0	449	31.3	41.7	10.9
1981	894	0.17	148	319	0	467	0	461	31.7	42.9	10.9
1982	896	0.16	145	269	0	414	0	391	35.0	44.0	9.4
1983	830	0.18	148	382	0	530	0	507	27.9	45.1	11.8
1984	784	0.17	130	497	0	627	0	591	20.7	46.2	13.6
1985	828	0.16	136	446	0	582	0	531	23.4	47.3	12.3
1986	849	0.16	138	424	0	562	0	534	24.6	48.8	11.5
1987	718	0.16	118	540	0	658	0	529	17.9	50.0	13.1
1988	660	0.17	109	533	0	642	0	449	17.0	51.3	12.5
1989	625	0.16	102	673	0	775	0	537	13.2	52.5	14.7
1990	671	0.17	116	741	0	857	0	607	13.5	53.8	15.9
1991	603	0.17	102	734	0	836	0	580	12.2	55.1	15.2
1992	572	0.17	98	720	0	818	0	572	12.0	56.4	14.5

1/ Production/consumption.

Source: USDA, FAS, PS&D database, April 1993.



Table 33--Egypt: Vegetable meals market

Year	Amount crushed	Extraction rate	Production	Imports	Exports	Consumption	Ending stocks	Feed use	Self-sufficiency ratio 1/	Population	Per capita consumption
	1,000 tons	Percent	-----1,000 tons-----						Percent	Million	Kilograms
1980	860	0.5	429	55	0	484	0	484	88.6	41.7	11.6
1981	894	0.52	467	106	0	573	0	573	81.5	42.9	13.4
1982	896	0.54	483	189	0	672	0	672	71.9	44.0	15.3
1983	830	0.54	451	265	0	716	0	716	63.0	45.1	15.9
1984	784	0.54	421	345	0	766	0	766	55.0	46.2	16.6
1985	828	0.54	444	345	0	769	20	769	57.7	47.3	16.3
1986	849	0.57	481	365	0	866	0	866	55.5	48.8	17.7
1987	718	0.56	404	296	0	690	10	690	58.6	50.0	13.8
1988	660	0.6	397	288	0	675	20	675	58.8	51.3	13.2
1989	625	0.78	488	275	0	763	20	763	64.0	52.5	14.5
1990	670	0.72	482	224	0	705	21	705	68.4	53.8	13.1
1991	618	0.53	327	208	0	535	21	535	61.1	55.1	9.7
1992	578	0.52	301	238	0	540	20	540	55.7	56.4	9.6

1/ Production/consumption.

Source: USDA, FAS, PS&amp;D database, April 1993.

Table 34--Egypt: Producer price for seed cotton

Price	1987	1988	1989	1990	1991
Price LE/ton 1/	620	660	700	740	828
Ratio to border Spot price	0.52	0.44	0.48	0.50	0.45
Ratio to wheat price	2.86	2.75	1.75	1.39	1.54

1/ LE = Egyptian pound.

Sources: USDA, Foreign Agricultural Service, World Bank.

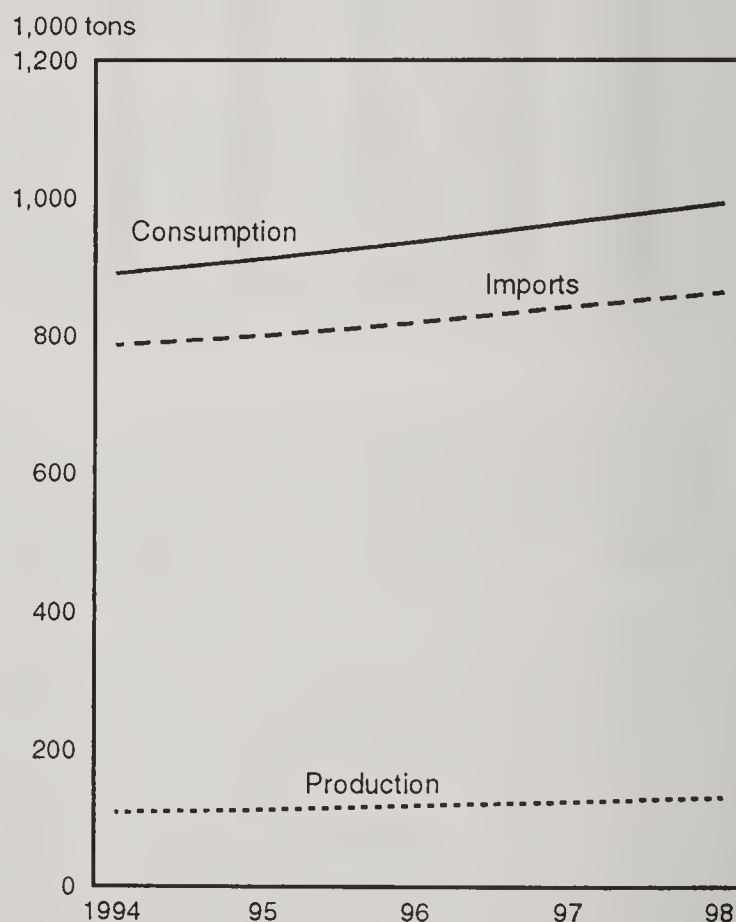
or near capacity, supplemented by imported crude oil and semi-refined oil for further domestic processing. The government has banned imports of refined oils and is encouraging the private sector to invest in oilseed processing. Currently, the private sector is involved in soy and palm oil processing, with an annual production capacity of 150,000 tons.

Per capita consumption of vegetable oil increased throughout the 1980's and was estimated at 15 kilos in 1992. About two-thirds of vegetable oil is used for cooking, and the remainder is used to produce shortening. The government rations vegetable oil at highly subsidized prices to about 90 percent of the population. Shortening is also sold but at an even-higher regulated price. Prices for oil processed by the private sector are not regulated but are affected by low government prices.

Egypt's vegetable oil imports almost doubled during the last decade, but they have stabilized since 1990. In the future, imports are expected to grow because of slow production growth and increasing consumer demand (fig. 40). The reduced use of tallow as a major soap ingredient in favor of palm stearin should also increase vegetable oil consumption.

Figure 40

## Egypt: Projected Vegetable Oil Use, 1994-98



Egypt was once a major tallow importer and the leading market of U.S. tallow.

The Egyptian Government is slowly raising the price of vegetable oils by reducing subsidies, in order to lower the pace of consumption growth and diminish budget exposure. Al-

though Egypt has excess crushing capacity, imports of whole oilseeds will not increase significantly because of inefficiencies in its crushing facilities.

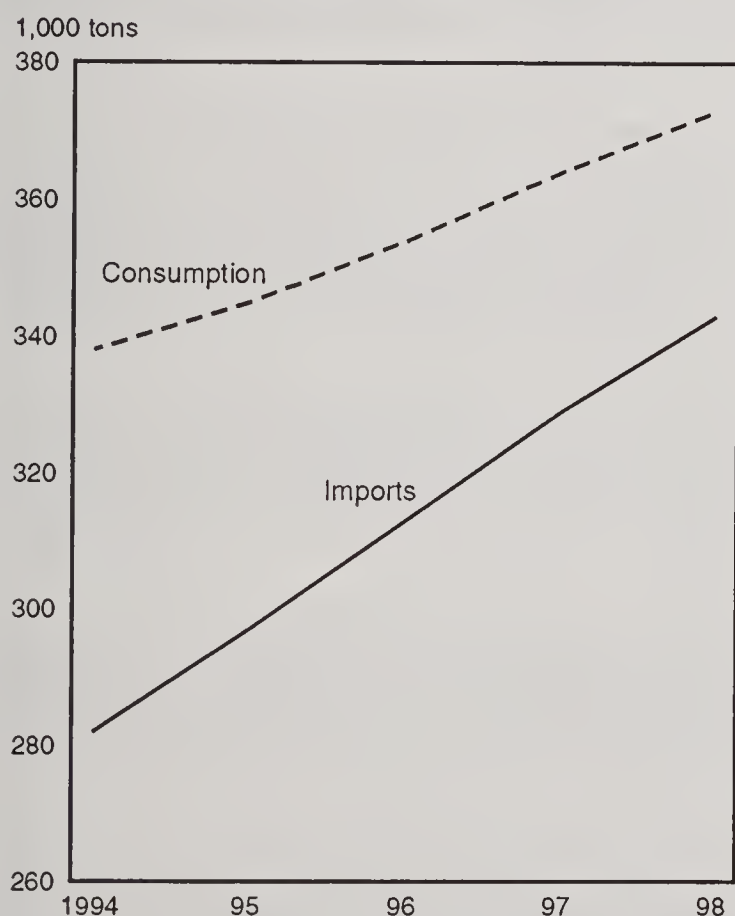
Egypt's vegetable oil imports consist mainly of sunflowerseed, palm, and cottonseed oils, with small amounts of soybean and linseed oils, all of which are controlled by the government. Imports of whole cottonseeds, peanuts, copra, palm nuts, palm kernels, hemp seeds, and poppy seeds are banned. Tariffs for soybeans, linseed, sesame seed, and sunflowerseed are 5 percent plus a 10-percent sales tax.

Meal output was estimated at 301,000 tons in 1992 and provided about 56 percent of total meal consumption. The government-owned crushing industry produces most of Egypt's domestic oilmeals, all of which are used in the production of livestock feeds. The public sector's total feed production capacity is about 3 million tons. The small quantity of meals produced by the private sector is marketed freely and sold to poultry producers.

The government ban on poultry imports and the recent lifting of an import ban on red meat may decrease poultry consumption. Also, given continued inefficiencies in the poultry sector (see Poultry section), meal imports are likely to rise slightly more than the population growth rate (fig. 41).

Figure 41

#### Egypt: Projected Soymeal Use, 1994-98



#### Iran's Demand for Oils and Meals Driven by Population and Income

Iran is an expanding market for vegetable oils, oil cakes, and oil meals. Demand is not only driven by higher incomes but also by a population explosion which took place in the 1980's (appendix table 13). While the government has made overtures at family planning and population control, at current rates of growth, Iran's population will approach 75 million by the end of the decade, putting further strain on the agricultural sector to meet growing food demand. In addition, increased urbanization, expected to reach 60 percent by the end of the century, will also increase demand for imported products.

Cottonseed accounted for two-thirds of Iran's oilseed output in 1992, with soybeans and sunflowerseed next in importance. Iran's vegetable oil consumption increased about 4 percent annually in the last decade, largely because of substantial consumer subsidies, as well as a decrease in the consumption of animal fats.

Total vegetable oil consumption is estimated to have tripled in the last two decades to around 600,000 tons in 1992. Per capita consumption has risen from an estimated 3.9 kilos in the 1960's to around 9 kilos by the mid-1980's. Demand will likely approach 650,000 tons by the end of this century. Import dependency will continue at 90 percent countrywide and 100 percent in urban areas.

Demand for meals rose 24 percent during the 1988-92 period, with consumption peaking at an estimated 555,000 tons in 1991 (appendix table 24). Imports provide approximately 80 percent of meal requirements. A government policy to reduce consumer subsidies for poultry and livestock is likely to slow demand to the rate of population growth. This would result in total meal consumption approaching 600,000 tons by the turn of the century, with an import share of 80 to 90 percent (fig. 42).

#### Morocco Is Highly Dependent on Vegetable Oil Imports

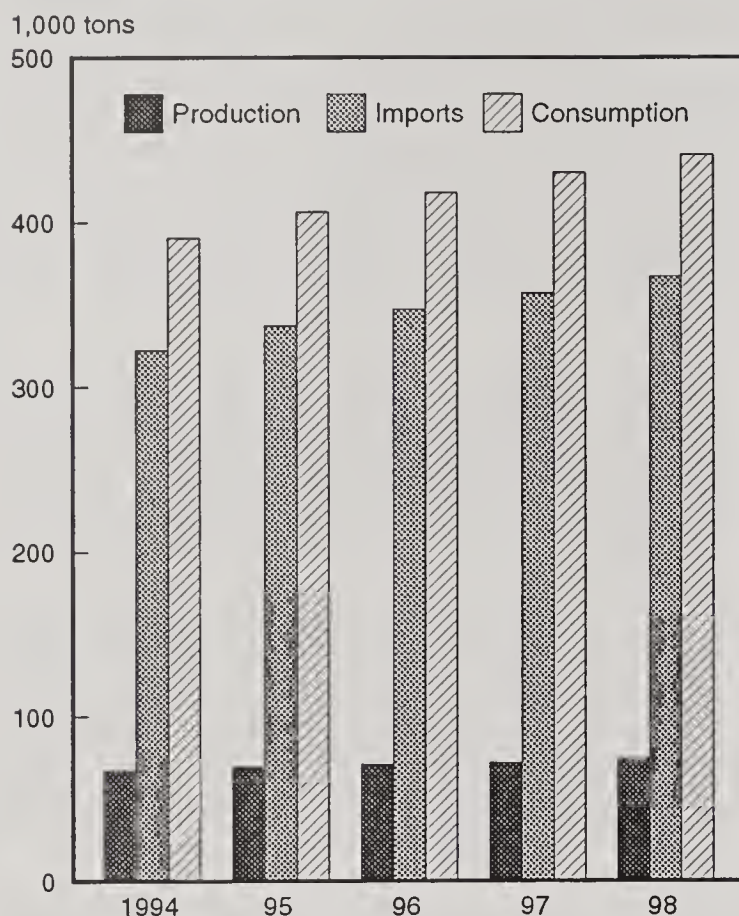
In its ongoing effort to conserve foreign exchange, the Moroccan Government's policy is to reduce import dependency and encourage domestic oilseed production. The policy is flexible to permit larger imports if adverse weather cripples domestic production, as it did in 1992. Another poor year is forecast for 1993 because of drought. With stocks already low, imports are likely to be up sharply.

Morocco remains highly dependent on vegetable oil imports, averaging two-thirds of consumption from 1988-92. However, oilmeal imports account for only a small portion of consumption. The supply of meals in Morocco is linked to domestic oilseed and fish meal output. The United States and Argentina have been the principal suppliers of soybeans, while rapeseed is imported primarily from Poland. Meals are imported mainly from the United States, Brazil, and the EC.

Sunflowerseed comprised more than 90 percent of total oilseed produced in 1992, with production doubling during the last 5 years (1988-92). Sunflowers are produced in rainfed



Figure 42

**Iran: Projected Soymeal Use, 1994-98**

areas in rotation with wheat and barley. Sunflower production is expected to continue to expand because of its high profitability and the fact that it is a reliable backup crop for cereals in drought years.

Until recently, the government was heavily involved in the oilseed market. This included setting producer and consumer prices, collecting the crop from farmers, and controlling imports. Sunflower producers in particular, were heavily subsidized during 1990-92, with domestic prices double world levels (table 35). Prices at the refineries are set uniformly for both imported and domestically produced oilseeds. Costs and profit margins for the refineries are fixed and revised annually by the government. The government also pays transportation costs for the movement of oilseeds to crushing factories and refineries. Consumer prices are maintained above the world price but below domestic production costs.

The government is planning to gradually liberalize the domestic oilseed market. Oilseed imports are no longer licensed, but are still subject to a 7.5-percent ad valorem tax and 12.5-percent import tax. The import tax for meals is 12.5 percent, plus a 12.5-percent customs duty. There continues to be a 19-percent value added tax on feed mix. So far only the soybean sector (5 percent of total oilseed production) has been liberalized.

In the past, oilseed production was promoted primarily to meet rising oil requirements. However, growing demand for

Table 35--Morocco: Support price for sunflowerseeds

Year	1990	1991	1992	1993
Price Dh/ton 1/	4,300	4,400	4,400	4,400
World price \$/mt	246.6	239.6	235.0	---
Exchange rate Dh/\$U.S.	8.24	8.7	8.5	---
Ratio: Domestic/world price (%)	2.1	2.1	2.2	---

--- = not applicable.

1/ Dh = dirham.

Source: Ministry of Agriculture, Morocco, and IMF data.

livestock products has shifted the government's focus to increased domestic meal output. The potential for increased meal demand is high. Morocco has a livestock population of over 24 million animals (appendix table 36), and its poultry output increased 5 percent annually from 1988-92. Commercial feedlots are limited in number, but growing.

The government's goal is to discourage meal imports, although they are already small. In the medium term, mainly whole oilseeds will be imported to stimulate the domestic processing industry. Domestic oilseeds output is limited by high production costs and inadequate farming experience and technology. Quantities imported in the future will depend on the government's ability to liberalize its import structure and on programs designed to encourage and increase demand by livestock producers.

### ***Saudi Arabia To Begin Soybean Imports In Late 1993***

Saudi Arabia is a major consumer and importer of vegetable oils and meals. It will become a large soybean importer when its new soybean crushing plant--with a potential annual capacity of 500,000 tons of beans--at Yanbu begins operations later in 1993.

Saudi Arabia has large and expanding refining facilities and financial resources to import crude and semi-refined vegetable oils for refining and packaging for the domestic market and for export to the GCC and other nearby Arab and African markets.

The country may begin exporting small quantities of oilmeals later this decade, most likely to the relatively small poultry operations in other GCC countries such as Kuwait, Bahrain, UAE, and Qatar. Exports however, will be insignificant in world trade.

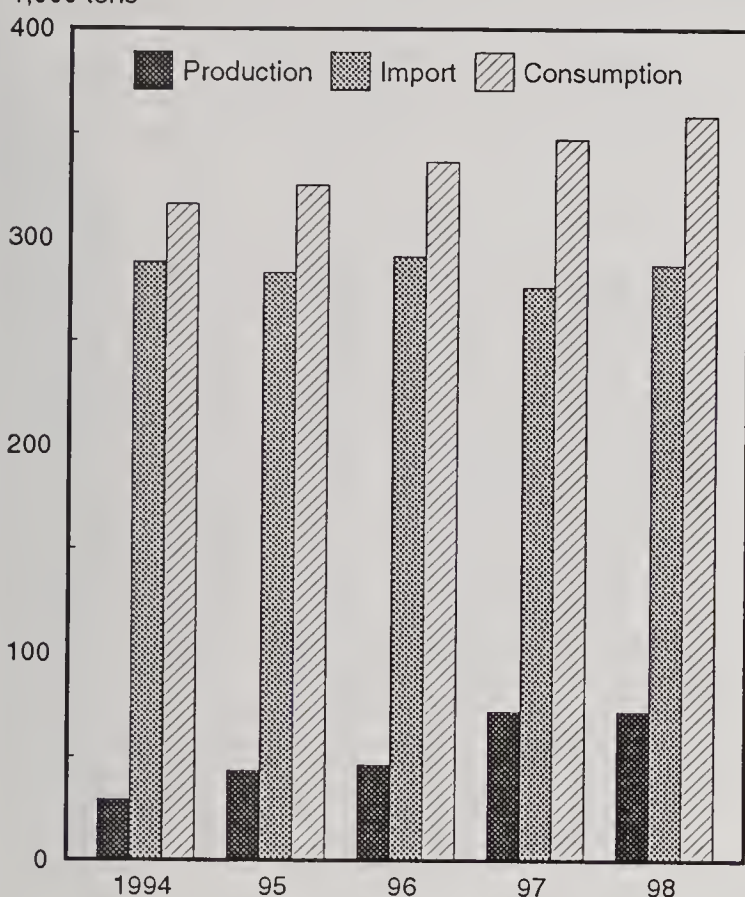
Palm oil is the major oil imported, followed by corn oil. Palm-kernel oil imports are also substantial. Palm oil is favored by the more traditional cultures of Saudi society (the nomadic Bedouins) and the large expatriate work force. Corn oil consumption is centered in the cosmopolitan urban areas (primarily Jeddah, Riyadh, and Dammam). Olive oil is con-



Figure 43

### Saudi Arabia: Projected Vegetable Oils Use, 1994-98

1,000 tons



sumed as salad dressing and dominates the edible (noncooking) oil sector.

Per capita consumption of vegetable oils is estimated to have increased from 13 kilograms in 1980 to 18 kilograms in 1992, comprising about 10 percent of the average daily caloric intake (appendix table 35). Saudi Arabia is now a mature market and increases in demand will strictly be a result of population growth and changes in consumer preference (fig. 43).

The government no longer subsidizes crude vegetable oils. All trade is carried out by the private sector. The government's role has been relegated to enforcing quality standards. Imports in 1992 were estimated at 309,000 tons, primarily from Malaysia (palm oil, 190,000) and the United States (corn oil, 77,000).<sup>3</sup>

Palm oil dominance in the market is expected to continue as long as its retail price is below the corn oil price. However, an increasingly health-conscious population, coupled with more advertising, has increased the potential for corn and soy oils. Once the new refinery in Yanbu is operational, some domestic soybean oil will displace palm oil imports.

<sup>3</sup> Data cited include USDA PS&D, FAO Agroatat, and estimates of trade matrices based on Foreign Trade Statistics published by the Saudi Ministry of Finance. Official Saudi data are often suspect due to habitual underreporting and omissions.

### Meal Consumption To Expand With Livestock Sector

Soybean meal consumption is forecast to expand slightly more than population in the foreseeable future, with the expansion of the sheep and poultry industries. Imports of meals however, are forecast to decline primarily because of the anticipated domestic processing of soybeans (fig. 44). Conversely, soybean imports are forecast to rise dramatically as domestic processing capacity increases. Both U.S. and Latin American suppliers are likely to share in the rising soybean imports.

A planned expansion in poultry production capacity (see Poultry section) and continued government support for livestock and dairy producers is likely to increase feed demand and subsequently meal consumption over the next 5 years.

### Turkey Is a Large Producer and Importer of Oils and Meals

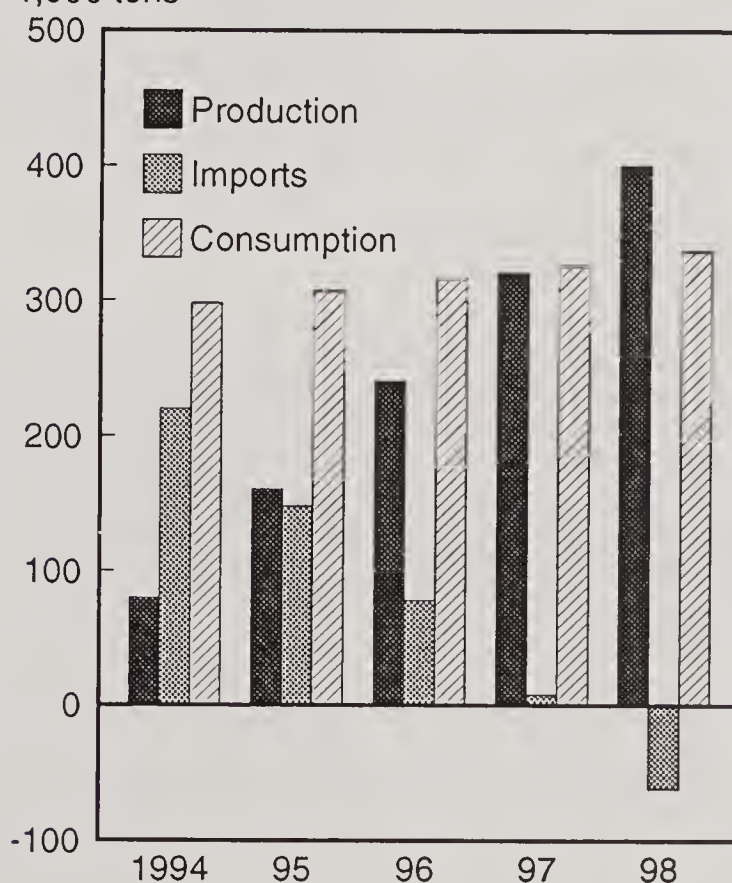
Turkey's oilseed market has grown rapidly in terms of domestic production and imports. Turkey is the major oilseed producer in the NAME region, with production concentrated in sunflowerseed and cotton. Oilseed imports are small, but the country imported 48 percent of its vegetable oil and 34 percent of its meal needs in 1992 (appendix table 21).

Oilseed production increased 15 percent from 1982 to 1991 and 23 percent from 1991 to 1992. Most of the increase was

Figure 44

### Saudi Arabia: Projected Soymeal Use, 1994-98

1,000 tons





due to a 51-percent increase in sunflowerseed production. In order to stimulate output, the Turkish Government offered producer incentives in the form of guaranteed support prices for sunflowerseed, soybeans, and peanuts. For example, in 1992 the support price for sunflowerseed was increased 67 percent and for soybeans 93 percent. While this increase is high, inflation in 1992 was 66 percent. The government is involved in soybean purchasing and marketing and has significantly improved the timeliness of producer payments. Fertilizer and hybrid seeds are also subsidized.

Turkey has 156 crushing facilities, with an annual capacity of about 2.5 million tons. The crushing capacity, however, is underutilized. As a result, the private sector is encouraging the government to import seed for further processing rather than oils and meals. In 1992, sunflowerseed accounted for 90 percent, and soybeans 6 percent, of total oilseed imports. In 1993, soybean imports are expected to be three times the 1992 level because of changes in import policies. In 1992, the import surcharge for sunflowerseed was increased from \$30 to \$80 per ton, while the surcharge for soybeans was kept at \$4. This should benefit American exporters as the United States is Turkey's major soybean supplier.

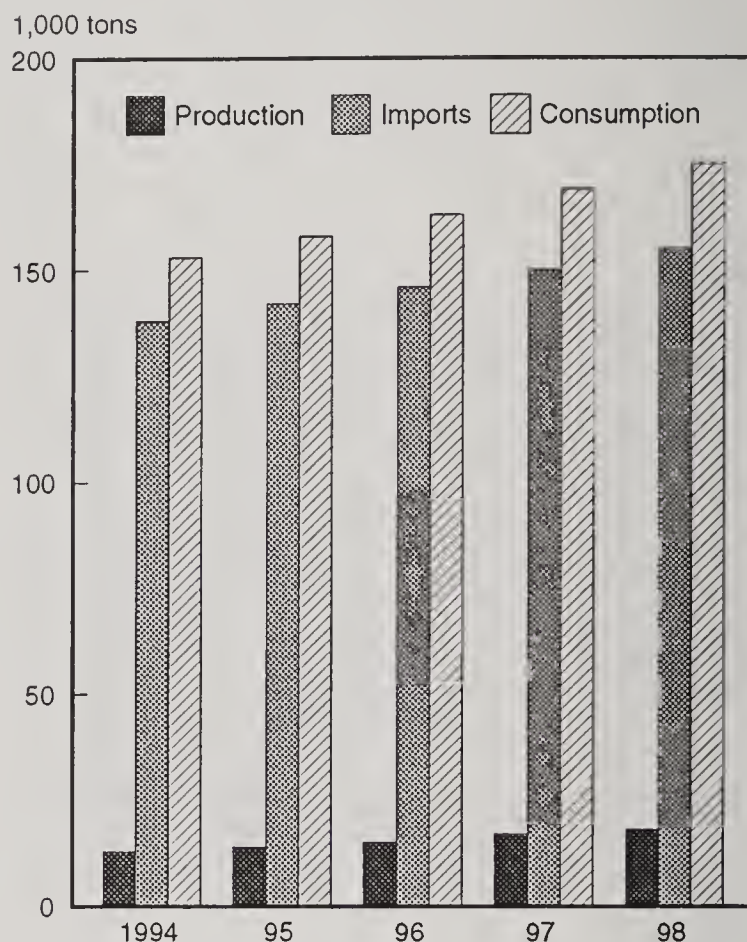
Turkey produced an estimated 645,000 tons of vegetable oil and 846,000 tons of oilmeals in 1992. Vegetable oil consumption was estimated at 1.1 million tons, and import dependency was estimated at 58 percent. The government is trying to reduce its dependency on vegetable oil imports with tariffs and surcharges. Currently, the import surcharge for crude vegetable oil is \$60 per ton, with the exception of sunflower oil, which is subject to a \$200-per-ton fee. In addition, the depreciation of the Turkish lira has increased import prices. Despite this, the domestic processing industry is still unable to compete with low-cost imports. The 1993 import policy provides favorable market access to the EC, and gives the EC a duty advantage over other suppliers for 137 agricultural commodities, including vegetable oils and meals (fig. 45).

### ***Meal Consumption Substantially Exceeds Production***

Meal output was estimated at just under 850,000 tons in 1992, and increased at an annual rate of 4.1 percent in the last decade. At the same time, consumption grew nearly 9 percent annually. Domestic meal prices are set by the government and are higher than the import prices of Turkey's main suppliers, the United States, Brazil, Argentina, China, and India. Feed millers, therefore, prefer to import meals rather than purchase the domestically produced product. The current import surcharge

Figure 45

### **Turkey: Projected soyoil use, 1994-98**



for meals is \$1 per ton, with a 2-percent import duty for EC meals and a 3-percent duty for other suppliers.

In Turkey, meals comprise about 30 to 40 percent of poultry feed and 10 to 15 percent of cattle feed. The bulk of the meal imports are soybean meals, 66 percent in 1992. The U.S. share of the soybean meal market increased from almost zero in 1988-90 to 25 percent in 1992. The gains were due to the availability of GSM-102 credit to both the government and the private sector. In 1992, the other two major suppliers were Brazil with a 25-percent share of the market and Argentina with a 23-percent share.

In the near term, demand for meals will continue to be driven by government support of the poultry industry, increased urbanization, and the growing export potential of livestock products to newly emerging nations in Asia and the FSU.

## Demand for Sugar in NAME Is Population Driven

*Sugar production in the region is limited and the NAME countries depend on imports to satisfy consumption. The sugar self-sufficiency ratio is less than 50 percent. Earlier income growth led to a major boom in the region's imports when the countries had relatively low per capita sugar consumption. The market has matured during the last decade, with a slight decline in per capita consumption. Sugar consumption is expected to grow at the same rate as population.*

*[Shahla Shapouri and Margaret Missiaen]*

Sugar imports in the Middle East and North Africa averaged 5.6 million tons and accounted for 17 percent of world imports from 1990 to 1993 (table 36). The Middle East accounts for 60 percent of regional sugar imports, mostly by Iran, Saudi Arabia, and Syria. Imports by Iraq, one of the largest Middle Eastern importers, declined in recent years because of the United Nation's trade embargo. The Middle East became less dependent on sugar imports between 1980 and 1993 (fig. 46). Production rose 5.8 percent per year during the same period. This exceeded consumption growth, which slowed from 1980 to 1993 as per capita consumption remained constant (table 37). Imports by the Middle East increased an average 1.5-percent a year during the 1980-93 period.

In North Africa, sugar production grew 3.4 percent per year during the 1980-1993 period, and import growth was about 2 percent, leading to a slight decline in per capita consumption. Algeria and Egypt are the largest North African sugar importers.

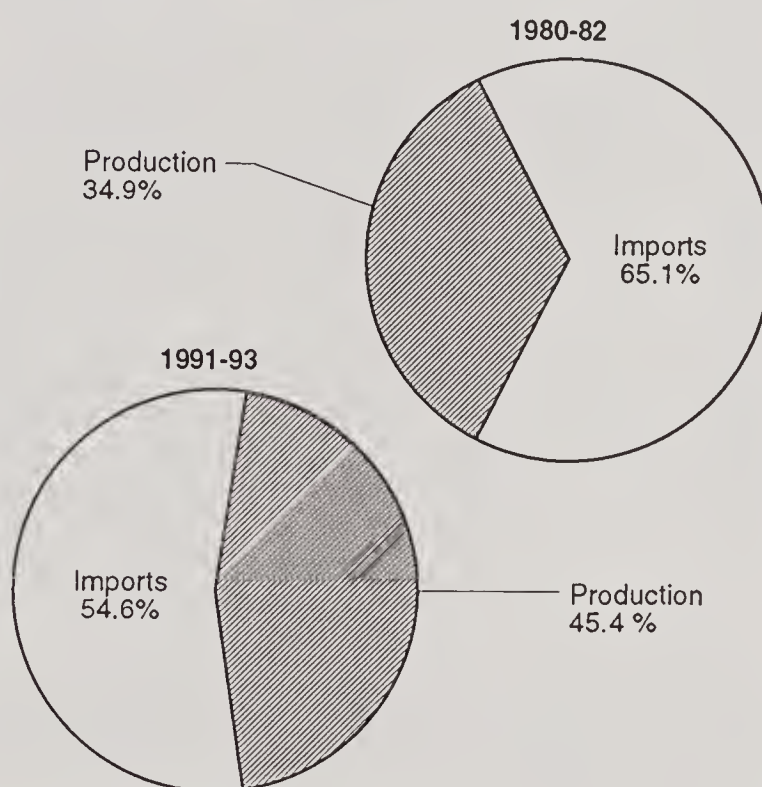
Per capita sugar consumption in the NAME countries is between 29 and 33 kilos per year. High population growth is the main factor behind increased demand for sugar. Changes in prices and incomes have only a small effect on sugar consumption. Historically, most countries subsidized sugar consumers, and declining real prices encouraged consumption. The effects of consumer price policies on demand growth, however, have been limited because of inelastic consumer price responses. The consumption effect of income growth was also limited because of a low sugar-consumption response to income, particularly in higher income Middle Eastern countries.

Resource limitations and, to a lesser extent, inadequate producer incentives curbed sugar production growth, and the region remained highly dependent on imports. Of the 15 Middle Eastern countries, only Iran, Iraq, Lebanon, Syria, and Turkey produce sugar. Turkey is nearly self-sufficient and exports in good production years. Iran produces 40 to 50 percent of its consumption, while Iraq, Lebanon, and Syria each produce less than 10 percent of their needs. Other countries depend entirely on imports. Among Middle Eastern producers, Iran, Syria, and Turkey increased production, while output in Iraq and Lebanon declined from 1980 to 1993.

In North Africa, Egypt and Morocco produce 60 to 70 percent of their consumption, Tunisia 15 to 20 percent, and Algeria

Figure 46

### Middle East: Sugar Production and Imports



less than 5 percent. Growth in sugar production was positive from 1980-93 for these countries, except for Algeria. Libya imports all its sugar. In both regions, sugar self-sufficiency is less than 50 percent.

### Stable Future Sugar Market

The region's sugar market is not expected to change much in the next 5 years. Income growth in the 1970's led to a major boom in the region's imports, when per capita sugar consumption was relatively low. The region is now a mature sugar market; therefore, any changes in income will have only a modest effect on consumption. Short-term crises, such as the trade embargo of Iraq, have reduced imports but are unlikely to have a lasting effect on import trends. In the longer term, sugar consumed in processed foods will increase as the industry develops.

The region's sugar imports are expected to grow at the same rate as population, 2.5 to 3.2 percent per year. The large



Table 36--NAME sugar market

Year 1/	Production	Imports	Exports	Consumption	Ending stocks	Self-sufficiency ratio 2/	Population	Per capita consumption
Middle East	-----1,000 tons-----					Percent	Million	Kilograms
1980	1,563	3,099	4	4,350	845	35.9	136.9	31.8
1981	1,267	2,682	3	4,067	724	31.2	141.6	28.7
1982	1,725	2,720	105	4,239	825	40.7	146.4	29.0
1983	2,332	2,906	195	4,509	1,359	51.7	151.1	29.8
1984	2,250	3,187	525	4,868	1,403	46.2	156.0	31.2
1985	2,246	3,141	470	5,034	1,286	44.6	161.1	31.2
1986	2,044	2,972	50	5,197	1,055	39.3	167.7	31.0
1987	2,175	3,300	54	5,336	1,140	40.8	172.8	30.9
1988	2,399	3,193	65	5,452	1,215	44.0	178.4	30.6
1989	2,083	3,210	1	5,550	957	37.5	184.1	30.1
1990	2,034	3,770	1	5,788	975	35.1	189.7	30.5
1991	2,701	3,299	14	5,663	1,298	47.7	192.9	29.3
1992	2,877	3,375	294	5,910	1,346	48.7	199.4	29.6
1993	3,089	3,301	400	6,150	1,186	50.2	206.0	29.9
						Percent		
Growth rate	5.8	1.5	16.8	3.1	4.3	2.6	3.1	-0.1
North Africa	-----1,000 tons-----					Percent	Million	Kilograms
1980	999	1,648	0	2,766	322	36.1	90.6	30.5
1981	1,003	1,983	0	3,012	296	33.3	93.2	32.3
1982	1,122	1,917	0	2,974	361	37.7	95.8	31.0
1983	1,229	2,095	0	3,262	423	37.7	98.3	33.2
1984	1,241	2,062	0	3,337	389	37.2	100.8	33.1
1985	1,301	2,144	0	3,379	456	38.5	103.4	32.7
1986	1,407	2,053	0	3,490	426	40.3	106.3	32.8
1987	1,461	2,003	0	3,529	361	41.4	109.0	32.4
1988	1,386	2,055	0	3,468	334	40.0	111.7	31.1
1989	1,512	2,191	0	3,661	376	41.3	114.4	32.0
1990	1,496	2,101	0	3,467	506	43.1	117.1	29.6
1991	1,548	2,145	140	3,497	562	44.3	119.9	29.2
1992	1,486	2,230	100	3,596	582	41.3	122.7	29.3
1993	1,512	2,260	100	3,670	584	41.2	125.5	29.2
						Percent		
Growth rate	3.4	1.6	---	1.9	5.2	1.0	2.5	-0.6

Note: Growth is average annual growth between 1980-82 and 1991-93.

1/ Refers to the marketing year which begins the previous September.

2/ Production/consumption.

--- = not applicable.

Source: USDA, FAS.

producing countries, Egypt and Morocco, are expected to continue to protect their domestic industries. However, because of limited natural resources, these countries will still have to rely on imports for at least half their consumption.

In Iran, production is expected to outpace consumption because of the large investment in expanding irrigated areas in the southern region of Khuzestan. The Iranian Government also purchased seven new sugar mills in 1992, each with an annual production capacity of 120,000 to 150,000 tons. Recent production growth exceeded 10 percent per year. Continuation of such a growth rate, when consumption is rationed, will mean lower import dependency. Import dependency is likely to decline from 47 percent of consumption in 1993 to 25 percent in 5 years. Turkey is the only country that will remain self-sufficient and have any export potential, depending on world sugar prices.

### ***Egypt Expanding Sugar Beet Production***

Egypt grows both sugar cane and sugar beets. Total sugar production growth averaged 3 percent per year from 1980 to 1993. Sugar beets account for 10 to 12 percent of total production, but output doubled from 1990 to 1991. Sugar cane output remains stable since government controls, although not fully enforced, hold area fairly constant. Sugar cane is grown in Upper Egypt, where it accounts for about 15 percent of the region's arable land. Cane area is irrigated, and yields are among the highest in the world, 97 tons per hectare in 1991. Weather variability has a limited effect on production, but a long, cold rainy season reduces yields. The government's aim is to increase yields to 100 tons per hectare by introducing improved varieties.

Sugar beets are a new crop, primarily grown on reclaimed land in the Delta. Since the early 1980's, the government has

Table 37--Growth in NAME sugar market, 1980-93

Country	Production	Imports	Consumption
		Percent	
Middle East			
Bahrain	0.0	2.0	3.7
Cyprus	0.0	1.9	1.4
Iran	8.0	0.8	3.2
Iraq	-8.3	-4.0	-3.0
Israel	0.0	3.7	3.6
Jordan	0.0	2.0	3.0
Kuwait	0.0	0.2	-1.6
Lebanon	-0.9	-0.6	-0.6
Yemen	0.0	8.9	8.4
Oman	0.0	6.5	6.4
Qatar	0.0	3.9	3.5
Saudi Arabia	0.0	2.4	2.4
Syria	5.0	2.5	2.6
Turkey	5.4	-0.2	4.7
UAE	0.0	6.4	5.9
North Africa			
Algeria	-0.6	3.8	2.9
Egypt	3.4	-1.1	1.4
Libya	0.0	3.9	3.6
Morocco	3.1	0.2	1.2
Tunisia	14.1	1.4	2.3

Note: Average-annual growth between 1980-82 and 1991-93.

Source: USDA, ERS calculations.

promoted commercial sugar beet output in order to reduce import dependency. One advantage of sugar beets is that they require less water than cane. This is important as water shortages have become a major concern in recent years. Because beets are a new crop, yields vary widely from 25 to 70 tons per hectare, depending on cultivation practices and producer experience. With more effective insect control and improvement in farming practices, yields are expected to increase.

Sugar beets, cane, and cotton are the last government-controlled crops in Egypt. Two government agencies are involved in sugar marketing. The Ministry of Agriculture and Land Reclamation supplies inputs and the Egyptian Sugar Company, under the Ministry of Industry, contracts with cane farmers for delivery to government-owned mills. A private company is responsible for sugar beet marketing, contracting with farmers to buy the crop and sell it to the Ministry of Supply (MOS) at a set price. The MOS distributes sugar to consumers through a ration system or at regulated prices in government stores.

Sugar marketing is controlled and only producers with government contracts receive subsidized inputs. For sugar cane, these include plowing, leveling, pesticides, credit, and some fertilizer. Energy costs are subsidized, and irrigation water is free. Sugar beet farmers receive the same subsidies, except for land preparation.

The Egyptian Government has made little investment in its sugar mills since it nationalized the eight mills existing in 1963. Now, the government plans to sell all the state holding companies to the private sector.

The crushing season for sugar cane lasts from mid-December to late-May. The cane processing plants have an employment-generating function, using three times more labor than required. Officials use this as justification for supporting the industry.

There is only one beet processing plant that operates at or near its capacity of 6,000 tons per day. The government's goal is to expand beet production and processing capacity and to construct three new plants--each with an annual capacity of 50,000 to 70,000 tons. These plants will process both beet and cane sugar.

The government raised prices for cane and beets in recent years to improve producer incentives. In 1992, for example, the cane producer price increased 14 percent. However, this will not change future planting decisions because the increased prices were offset by higher fertilizer prices and land taxes, and because government controls limit significant changes in area. High returns to alternative crops also reduce the attractiveness of cane and beets. In 1990, the combined returns from a wheat/corn rotation were double the returns to cane. In the long run, any gain in cane production will come more from improved yields than expanded area. The concern over cane's high water requirements is expected to reduce government support and, therefore, the area planted.

Egypt's sugar consumption increased about 1 percent per year between 1980 and 1993, significantly below population growth (table 38). Per capita consumption increased during the early 1980's and then declined (fig. 47). About 70 percent of the sugar is consumed directly, and the rest is used in food processing.

Table 38--Egypt: Sugar market

Year	Production	Imports	Consumption	Ending stocks	Self-sufficiency ratio 1/	Per capita consumption
	-----1,000 tons-----				Percent	Kilograms
1980	649	522	1,171	37	55.4	28.1
1981	646	693	1,338	38	48.3	31.2
1982	734	650	1,384	38	53.0	31.4
1983	756	750	1,505	39	50.2	33.4
1984	752	780	1,532	39	49.1	33.2
1985	873	728	1,600	40	54.6	33.8
1986	953	750	1,643	100	58.0	33.7
1987	989	606	1,645	50	60.1	32.9
1988	907	635	1,542	50	58.8	30.1
1989	945	733	1,678	50	56.3	31.9
1990	957	595	1,452	150	65.9	27.0
1991	982	525	1,477	180	66.5	26.8
1992	950	570	1,520	180	62.5	27.0
1993	1,008	552	1,560	180	64.6	27.1
	Percent					
Growth	2.9	-2.2	0.7	14.1	2.2	-1.6

Note: Growth is average-annual growth between 1980-82 and 1991-93.

1/ Production/consumption.

Source: USDA, FAS.



The government subsidizes consumer prices (for direct consumption) through a ration system. Each person may purchase 750 grams per month at a price of LE 0.10 per kilogram (\$0.05 in 1990). This price has not changed since 1980 and was about 20 to 30 percent of the EC import price during

1980 to 1991 (table 39). An additional ration of 750 grams per person per month is sold at LE 0.5 per kilogram.

Outside the ration system, the government continues to control prices, but at a much higher level, LE 1.60 per kilogram in 1991. In 1992 this price was lowered to LE 1.40, responding to a decline in world sugar prices.

Egypt remains dependent on imports for about one-third of its sugar requirements. The government regulates imports to maintain its monopoly on the distribution of sugar for direct consumption. The private sector can import sugar to sell to the government on a cost-plus basis. To encourage the participation of the private sector, the profit margin for importers was raised from 6 to 9 percent in 1992. The government also lifted the import quota, allowing private sector imports for industrial use.

### *Per Capita Sugar Consumption Declining in Morocco*

Morocco produces about two-thirds of its sugar requirements. The government's goal is to reduce import dependency by increasing domestic output. Sugar production increased 3.2 percent per year from 1980 to 1993, while area harvested remained constant at 15,000 hectares (table 40). The government is encouraging early harvesting through the use of short-cycle varieties to spread out the refining season. Sugar beets account for about four-fifths of domestic sugar production.

Most sugar beets are produced in rainfed areas, while cane is grown under irrigation. The government administers the irrigated area, which has remained stable during the last 5 years. In rainfed areas where government is less involved, farmers have more flexibility in production decisions, and annual changes in area depend on the relative prices of alternative crops. Producers in these areas have the option to contract

Figure 47

### **Egypt: Sugar Consumption, 1980-93**

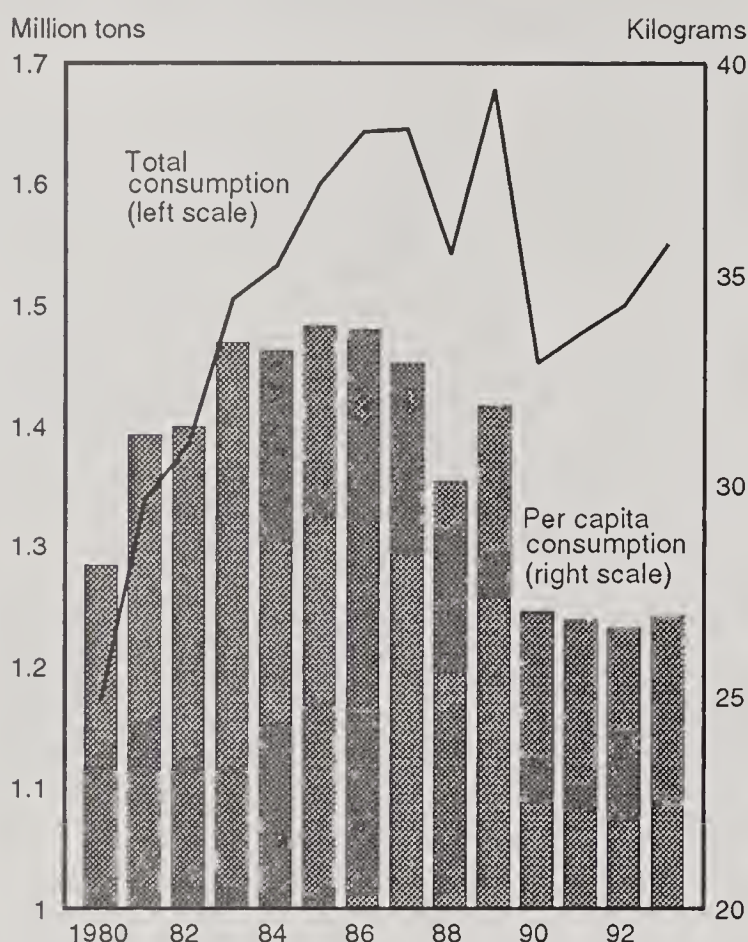


Table 39--Egypt: Sugar prices relative to international prices

Year	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Producer price (LE/ton)	18	18	20	24	27	31	34	40	50	58	66
Consumer price (LE/ton)	100	100	100	100	100	100	100	100	100	100	250
Exchange rate											
LE/\$ Central bank	0.7	0.7	0.7	0.7	0.7	0.7	0.7	1.1	2.0	3.3	3.3
LE/\$ Commercial banks	1.0	1.1	1.2	1.4	1.8	2.2	2.3	2.6	2.7	3.3	3.3
World price (Caribbean), raw (\$/ton)	185	187	115	89	133	149	225	282	275	198	200
EC import price raw (\$/ton)	399	387	353	355	409	472	524	501	578	611	622
Transportation cost (\$/ton)	19	14	15	15	13	13	25	21	22	22	22
Ratio (producer to Caribbean price)	1.1	1.2	2.0	3.0	2.4	2.5	1.8	1.1	0.8	0.7	0.8
Ratio (producer to EC import price)	0.3	0.3	0.4	0.4	0.3	0.3	0.2	0.2	0.1	0.0	0.1

Sugar cane conversion factor to raw sugar = 0.11.

Raw sugar to refined = 1.07.

LE = Egyptian pound.

Sources: USDA, FAS, Agricultural Attache, Annual Sugar Reports; IMF, International Financial Statistics.

with government-owned mills, which makes them eligible for subsidized inputs such as seed, fertilizer, and pesticides.

The government sets producer prices to maintain adequate production incentives. The actual price paid varies from the base price, depending on the sugar content. The government has increased producer prices every year since 1988 to offset higher production costs, particularly for fertilizer, fuel, and wages. Producer prices rose 42 percent between 1988 and 1991. Although cost-of-production data are scarce, producer price increases have been in line with the 10- to 12-percent annual inflation rate. Most of the increases in production

costs, especially for fertilizer and fuel, are a result of market liberalization measures taken by the government since the late 1980's. The government's goal is to reduce its role in the market. However, the recent increase in input costs hurt producers in irrigated areas.

Producer prices ranged from 60 to 110 percent of Caribbean (world) prices during 1982-1992 (table 41). Caribbean prices do not reflect supply and demand in the international market, because major importers, such as the EC and the United States, have tariff or quota systems that set import prices two to four times above the Caribbean price. Prices in Morocco were below Caribbean prices (the lower bound of world prices) in 5 of the 10 years. While the government subsidized inputs to increase production incentives, it used import quotas and variable levies to limit imports and protect the sugar industry. In 1991 the import duty on sugar was 10.5 percent ad valorem, plus an additional import tax of 12.5 percent. Even with reduced government intervention in agricultural markets, a minimum tax on sugar imports is likely to protect domestic producers.

The government sets consumer prices and has held them constant during the last 7 years (1986-1992). This has led to a decline in real prices. Consumer prices are below domestic production costs. Consumer prices were higher than the Caribbean but lower than the EC import price (the upper and lower bounds of world prices). The difference between the international (the EC import price) and the consumer price has increased since the early 1980's.

Sugar consumption in Morocco increased 1.2 percent a year from 1980 to 1993, less than the 2.4-percent annual population growth rate. Per capita sugar consumption was about 30 kilograms during the last 5 years, compared with 32 kilograms in the early 1980's. Increasing real per capita income (2 percent per year from the last 10 years), declining real consumer prices, and population growth all affect consumption.

Table 40--Morocco: Sugar market

Year	Production	Imports	Consumption	Ending stocks	Self-sufficiency ratio 1/	Per capita consumption
	-----1,000 tons-----				Percent	Kg
1980	333	231	680	126	49.0	33.1
1981	341	272	664	75	51.4	31.5
1982	367	350	680	112	54.0	31.6
1983	455	270	712	125	63.9	32.3
1984	470	247	740	102	63.5	32.9
1985	400	319	672	149	59.5	29.2
1986	422	238	707	102	59.7	30.1
1987	435	297	722	112	60.2	30.1
1988	443	295	741	109	59.8	30.2
1989	527	283	783	136	67.3	31.2
1990	494	276	775	131	63.7	30.3
1991	519	250	760	140	68.3	29.1
1992	499	280	767	152	65.1	28.7
1993	454	338	790	154	57.5	29.0
	Percent					
Growth	3.15	0.16	1.23	3.22	1.93	-0.94

Note: Growth is average-annual growth between 1980-82 and 1991-93.

1/ Production/consumption.

Source: USDA, FAS.

Table 41--Morocco: Sugar prices relative to international prices

Year	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Producer price, beets (D/ton)	144	144	161.8	173.5	198.5	198.5	195.5	240	259.5	277	291
Consumer price (D/ton)	2,800	2,800	2,850	3,020	3,350	3,350	3,350	3,350	3,350	3,350	3,350
Exchange rate (D/\$)	6.0	7.1	8.8	10.1	9.1	8.4	8.2	8.5	8.2	8.7	8.5
World price (Caribbean), raw (\$/ton)	185	187	115	89	133	149	225	282	275	198	200
EC import price, raw (\$/ton)	399	387	353	355	409	472	524	501	578	611	622
Transportation cost (\$/ton)	19	14	15	15	13	13	25	21	22	22	22
Ratio (producer to Caribbean price)	0.8	0.7	1.0	1.1	1.0	1.0	0.7	0.6	0.7	1.0	1.1
Ratio (consumer to EC import price)	1.0	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.6	0.6	0.6

Beet conversion factor to raw sugar = 0.1449.

Raw sugar to refined = 1.07.

D = dirham.

Sources: USDA, FAS, Agricultural Attache, Annual Sugar Reports; IMF, International Financial Statistics.



## Turkey's Sugar Exports Increase

Turkish sugar production has grown faster than consumption since 1991, following the pattern of the mid-1980's. Average output in 1991 and 1992 was 35 percent larger than in 1989 and 1990. With three consecutive good crops, stocks are high. While the government incurs losses on exports because domestic costs are higher than world prices, exports will continue at least in the short term (table 42). The success of the sugar industry has political value, and the government commitment seems to be firm. Therefore, exports depend on government subsidy policies and their budget implications.

The government sets the producer price. The support price was Turkish lira (TL) 202 per kilogram in 1991, an increase of 62 percent above the previous year (table 43).<sup>1</sup> In 1992, the support price increased again, by 63 percent, to TL 330 per kilogram for sugar beets with 16-percent sugar content. The actual price paid, however, increases TL 20.6 for every 1-percent increase in sugar content; similarly the price decreases with a decline in sugar content. The government also pays a premium to promote production in certain regions, and to farmers who deliver their crops early.

<sup>1</sup> Official Gazette December price.

Table 42--Turkey: Sugar market

Year	Production	Imports	Exports	Consumption	Ending stocks	Self-sufficiency ratio 1/	Per capita consumption
	-----1,000 tons-----					Percent	Kilograms
1980	1,052	200	4	1,151	117	91.4	25.5
1981	930	75	3	1,036	83	89.8	22.4
1982	1,400	0	105	1,100	278	127.3	23.2
1983	1,860	0	195	1,210	733	153.7	24.9
1984	1,770	0	525	1,330	648	133.1	26.7
1985	1,655	0	470	1,410	423	117.4	27.7
1986	1,398	0	50	1,466	305	95.4	28.1
1987	1,475	201	54	1,557	370	94.7	29.2
1988	1,780	35	65	1,625	495	109.5	29.7
1989	1,410	0	1	1,679	225	84.0	30.0
1990	1,380	470	1	1,729	345	79.8	30.3
1991	1,944	247	14	1,790	732	108.6	30.7
1992	2,052	17	294	1,844	663	111.3	30.9
1993	2,120	5	400	1,890	498	112.2	31.0
				Percent			
Growth	5.39	-0.20	16.76	4.72	12.51	0.67	2.40

Note: Growth is average annual growth between 1980-82 and 1991-93.

1/ Production/consumption.

Source: USDA, FAS.

Table 43--Turkey: Sugar prices relative to international prices

Year	1987	1988	1989	1990	1991	1992
Producer price, beets (L/ton)	20,500	38,000	77,000	115,000	202,000	330,000
Consumer price (L/ton)	NA	NA	1,000,000	1,700,000	2,300,000	6,400,000
Exchange rate (L/\$)	857	1,422	2,122	2,609	4,700	7,300
World price (Caribbean), raw (\$/ton)	149	225	282	275	198	200
EC import price, raw (\$/ton)	472	524	501	578	611	622
Transportation cost (\$/ton)	13	25	21	22	22	22
Ratio (producer to Caribbean price)	1.0	0.7	0.8	1.0	1.4	1.4
Ratio (consumer to EC import price)	0.0	0.0	0.8	1.0	0.7	1.3

Beet conversion factor to raw sugar = 0.1449.

Raw sugar to refined = 1.07.

NA = Not available.

L = lira.

Sources: USDA, FAS, Agricultural Attache, Annual Sugar Reports; IMF, International Financial Statistics.

The Sugar Corporation (a state economic enterprise under the Ministry of Industry and Trade) buys all sugar beets produced in the country. Farmers bring their crops to the purchasing centers in each region. The corporation processes all beets in domestic factories. Turkey has 27 sugar factories, either owned by the government or operated jointly by public and private banks.

Sugar consumption increased 4.7 percent during the 1980-1993 period (fig. 48). Growth in consumption, however, has slowed since 1990 to 2.9 percent because of the elimination of consumer price subsidies and slow income growth. During the last several years, consumer prices have been adjusted to track changes in domestic production costs. (It should be noted that consumption data are weak and derived from production, plus imports.)

The government's goal is to dampen consumption growth and promote sugar production and exports, even at a loss. Domestic producer prices were set significantly higher than international prices (Caribbean price), particularly in 1991 and 1992. Producers also receive additional support, including input subsidies. The high costs of production will limit government support for the industry in the future. Most of Turkey's sugar exports go to neighboring countries such as Iran, Iraq, Syria, and the former Soviet Union.

#### ***Sugar Production Rises in Iran***

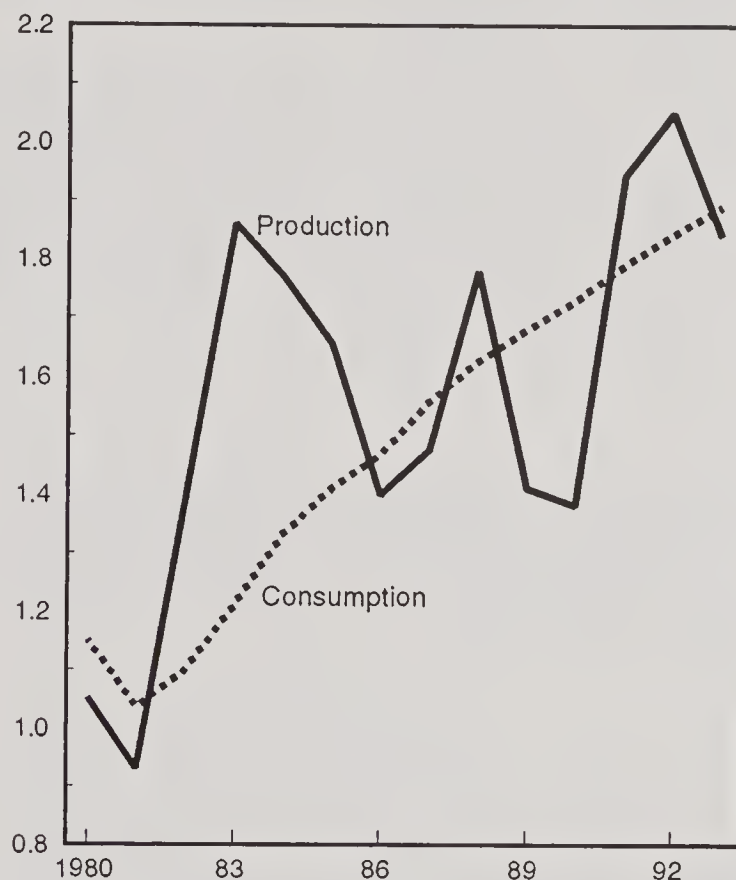
Iran's sugar production grew 8 percent per year from 1980 to 1993, the highest growth rate in the region. About 75 to 80 percent of production is sugar beets. Beets are produced in irrigated areas and in rotation with wheat. The government promotes beet production to reduce import dependency and to improve the soil. Phosphate fertilizer used on beets improves the soil and results in higher wheat yields. Sugar beet byproducts are used as animal feed.

Iran has 35 sugar processing plants with a capacity nearly double current production. The government plans to expand production, particularly by improving yields on small, non-mechanized farms. These farms produce about 50 percent of Iran's sugar, but their yields are only 60 to 70 percent of yields on larger, mechanized farms. The government sets producer prices, and it intends to increase incentives to small farms by

Figure 48

#### **Turkey: Sugar Production and Consumption, 1980-93**

Million tons



promoting cooperatives, improving extension services, and increasing credit availability. An increase in production and farm returns reduces import dependency and slows rural-urban migration.

On the consumer side, the Iranian Government uses a ration system and provides sugar at highly subsidized prices. Parallel market prices for sugar are three to four times the controlled price. During the last decade, the government managed to reduce the pace of consumption growth by reducing the sugar ration. Per capita sugar consumption declined between 1980 to 1993.



# Turkey: The Southeastern Anatolia Irrigation Project (GAP)

*Turkey is constructing a massive irrigation project in the southeastern part of the country that will eventually irrigate 1.7 million hectares. At completion, early in the next century, it is expected to significantly raise output of cotton, tobacco, sugar beets, corn, rice, barley, vegetables, and livestock. When it began, GAP was expected to significantly boost Turkish agricultural exports, but this may not be the case. [Gil Schorr and Michael E. Kurtzig]*

Turkey is the top agricultural producer and exporter in the Middle East, producing significant amounts of grains, livestock, cotton, tobacco, oilseeds, fruits, vegetables, and sugar. Although the agricultural sector's share in the GDP continues to decline, it still accounts for 20 percent and employs nearly one-half of the labor force.

Turkey is a major exporter and importer of agricultural products in the region, with exports totaling \$2.9 billion in 1991 and imports, \$1.4 billion. In the last few years, increased demand within the livestock sector, more open markets, and rising exports, have accounted for increased imports of a number of commodities including corn, rice, hides and skins, tobacco, and vegetable oils.

Turkey's livestock sector continues to expand, particularly the poultry sector, stimulating a rising demand for meals and other feeds. Until recently, Turkey exported large numbers of cattle, but growing demand for meat has slowed exports. On the other hand, strong export performance in 1991 was led by tobacco, filberts, vegetable oils, pulses, wheat, and livestock products.

Within its vibrant agricultural sector, Turkey has also undertaken a major irrigation project known as the Southeastern Anatolian Project, (GAP) in the Southeastern Anatolian Plateau. The GAP has been under construction for 12 years. It comprises a series of 13 major irrigation projects, with a network of 21 dams, 17 hydroelectric power plants, and numerous irrigation facilities on the Euphrates and Tigris Rivers. Upon completion, projected to be early in the next century, the project will irrigate 1.7 million hectares of land and produce 27 billion kilowatt hours of energy.

The GAP construction encompasses the provinces of Adiyaman, Diyarbakir, Gaziantep, Mardin, Siirt, Sanliurfa, Sirnak and Batman, approximately 9.5 percent of Turkey's total area. In ancient times, this area was known as part of the fertile crescent, but in recent years it has had little investment and has not kept abreast with development as have other parts of Turkey.

The most important part of the project is the Ataturk Dam and Hydroelectric Power Plant in the province of Sanliurfa, which was completed in 1992. This dam (the fifth largest

rock-filled dam in the world, reaching a height of 169 meters) will eventually irrigate half a million hectares. The Sanliurfa Tunnels, the other major unit of the GAP, is expected to be completed later this year and will irrigate 480,000 hectares by 1994 (330,000 by gravity and 150,000 by pumping).

By the time the entire GAP project is completed, probably by 2005-2010, it is expected to have a major impact on Turkey's agricultural sector. Agricultural production in the southeastern Anatolia region will increase 10 to 15 times. Output in the region is forecast to comprise about 23 percent of Turkey's total output by early in the next century (fig. 49).

The GAP project will create significant increases in the production of cotton, tobacco, sugar beets, corn, rice, barley, vegetables, livestock, and other products (table 44). When GAP was initiated, it was thought that it would lead to a significant increase in agricultural exports and allow Turkey to become even more competitive on the world agricultural market. But it now appears that this may not be the case.

Recent assessments done by the World Bank, and Turkey itself, point to a far lower surplus from the GAP region than first forecast. There are two principle reasons for this. First, GAP's positive effect on the Turkish economy in the south-

Figure 49  
GAP Region: Crop Production, 1986 and 2005

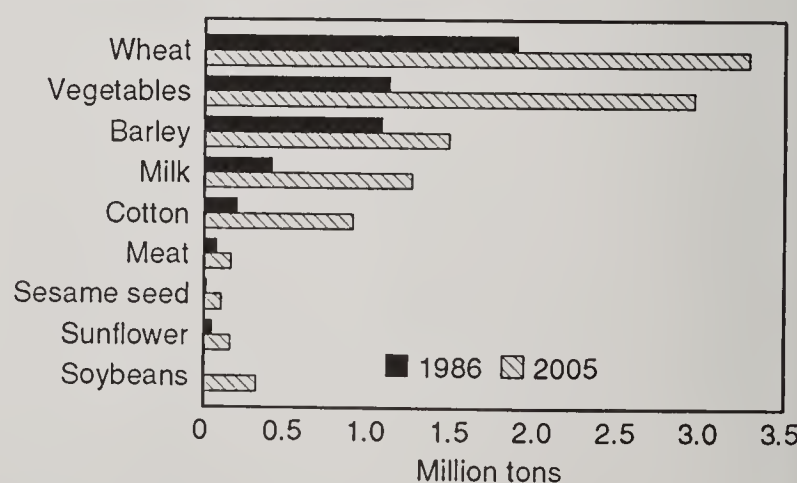


Table 44--Projected agricultural production as a result of GAP, 2005

Crop	1991	2005	Percent growth 1991-2005
	1,000 tons		Percent
Corn	2,200	2,400	9
Cotton	565	1,250	121
Fruits	5,550	8,325	51
Nuts	542	631	16
Oil seeds	2,076	3,404	64
Rice	185	327	77
Sugar beets	13,986	18,085	29
Tobacco	243	262	8
Vegetables	11,215	15,913	42

Sources: International Commission on Irrigation and Drainage; 1992 Agricultural Situation Annual Report, USDA, Foreign Agricultural Service, Ankara.

eastern Anatolia region will cause a dramatic rise in population. From 1965 to 1985, the annual population growth rate in this region was 2.9 percent, compared to the national average of 2.4 percent. However, since 1985, when optimism about the economic potential of GAP began to spread, the annual population growth rate has risen to 3.9 percent, and that trend will continue with a projected 9.2 million people living in southeastern Anatolia by the year 2005.

This rise in population will significantly increase the regional demand for foods and services and absorb much of the new agricultural output. This will likely leave little for the export market.

On the other hand, by the year 2010, the GAP region will no longer be dependent on the rest of Turkey for its agricultural products. Turkey will therefore be able to sustain agricultural self-sufficiency, while continuing to export.

The second reason that GAP's impact on Turkey's agricultural exports is likely to be lower than first forecast is that, despite its size, GAP's contribution to the country's GDP as a whole will be limited. Although GAP will eventually add 1.7 million hectares of irrigated land in southeastern Anatolia (a 50-percent increase in irrigated land for the country as a whole), the total area irrigated in Turkey will only increase from 15 to 25 percent, so 75 percent of Turkey's output will remain under rainfed conditions. The Turkish Government estimates that, as a result of GAP, the country's agricultural GDP will grow 4.9 percent, not sufficient to greatly increase exports (table 45).

GAP will, however, create significant advances in other sectors of the Turkish infrastructure. Activities in the GAP region will support an expansion in the transportation and communication systems, including highways, railways, and airports, which will expand intra- and inter-regional trade, particularly with countries in the Arabian Peninsula, as well as with Iraq and Iran. Industrial development will include many agroindustries such as vegetable oil refining, cotton ginning and textiles, meat processing, seeds and seedlings, integrated livestock and poultry operations, and tanneries.

Table 45--Projected growth rates by sector for the GAP 2005

Sector	1985	2005	Annual growth rate
	8 billion TL 1/		Percent
Agriculture	3,339	8,672	4.9
Industry	1,324	8,927	10.0
Construction	628	2,246	6.6
Services	3,150	17,716	9.0
GRP 2/	8,442	37,562	7.7

1/ TL=Turkish lira, exchange rate as of May 1993, TL 9,956=US\$1.

2/ Gross Regional Product.

Source: Cerraghi Agency, GAP Special Report, Istanbul, February, 1993.

New industrial zones are planned upon completion of the irrigation and power-generation facilities. Forestry will become an established industry in the region as well. By 1988, there were 71,000 hectares of established "energy forests" in southeastern Anatolia to provide for the increasing demand for firewood and industrial raw material. With improved irrigation, surplus wood will be exported to the Middle East or used in other parts of Turkey.

The cost of the GAP is currently estimated at \$25 billion, a major budget exposure in a country with a current nominal GDP estimated at \$118 billion. The Turkish Government has thus far provided most of the funding, placing an enormous strain on its economy, which is the major reason the government has failed to bring inflation under control.

International institutions have recently become involved in the financing of GAP. The World Bank has provided credit for the Agricultural Extension and Applied Research portion of the project. The Swiss, Italian, and French governments have provided credit for the Ataturk Dam and Hydroelectric Power Plant. The American Pioneer Seed Company and the Australian Government have invested money in the export sector, and other countries, including Italy, Germany, and Japan, have had varying roles in the development of GAP. Other than investment by private U.S. corporations, the United States has not been involved in the project. The Turkish Government is soliciting U.S. interest in the fields of engineering, construction, power, irrigation, and agriculture.

The project has not been without its problems. Much concern has been expressed that the Turkish Government has not sufficiently addressed the environmental consequences of the project. Among the hazards are industrial pollution, upriver runoff of effluence, erosion, salinization, and air pollution. For example, only about 30 percent of the irrigated area will use drip irrigation, the rest will use the open-furrow system. As this project comes on stream, pollution controls will be needed to address problems such as sewage treatment, water purification, and desertification. Some steps are being taken, for example, the city of Gaziantep is in the process of developing a sewage treatment plant.

Other problems deal with the age-old concern of the riparian rights of contiguous countries. Construction of GAP has



reduced the water flow of the Euphrates and Tigris Rivers, particularly to Iraq and Syria. Such concerns strike at the heart of Middle Eastern agriculture--water. Various plans have been suggested by Turkey to alleviate these concerns, including a so-called peace pipe proposal that would transport

water from the Ceyhan and Seyhan Rivers in Turkey to various countries in the southern tier. These are, however, ageless problems cutting at the soul of the region and will require much investigation and negotiation in the future.

## Water Shortages Within the Jordan Basin

*The NAME region is depleting its water resources faster than they can be replenished. The countries that lie in the Jordan River basin--Jordan, Israel, Syria, and Lebanon--face a particularly bleak future. Israel and Jordan are using their water reserves 15 percent faster than they are being replenished. Increasing populations and urbanization exacerbate water shortages, while modern irrigation methods and conservation ease them. The Basin's countries will have to cooperate to solve the water shortage. [Gil Schorr]*

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The Jordan Basin, which encompasses Israel, Jordan, Syria, Lebanon, and the Occupied Territories (West Bank and Gaza Strip), faces a severe water shortage in the coming years. The region's water supplies are being depleted much faster than they are being replenished, and a number of countries have already faced, and will continue to face water emergencies. The region's growing population, expanding agriculture, industrialization, and relatively high living standards demand more fresh water. Drought and pollution limit its availability. War and mismanagement squander it (1).

The principal river in the basin is the Jordan, whose waters flow south from Lebanon and Israel into the Dead Sea. Three rivers make up the source of the Jordan. The Dan River, mostly spring water, is located in Israel. The Hasbani River emanates from Lebanon and is spring and rainfed. Finally, the Banias Springs in the Golan Heights flow into tributaries which form the Sea of Galilee. The Yarmuk River, originating in western Syria, also enters the Jordan directly below the Sea of Galilee. The Yarmuk River forms the border between Jordan and Syria for 40 kilometers, then flows into the Jordan River and creates the border with the West Bank.

The Yarmuk River has been a particularly sensitive subject in the region. Because it flows near Jordan, Syria, and Israel, each country has made claims to its water. The Jordanians and Syrians have been trying to complete a project known as the Unity Dam, along the 40-kilometer portion of the Yarmuk that creates a natural boundary between the two countries. The project was initiated in 1953 but was halted in 1967 due to the 6-Day War. It was revived in 1975, but halted again in 1990 because of the Gulf War.

A 1987 agreement between Syria and Jordan gave Jordan 75 percent of the water, and Syria 25 percent. Jordan received the larger share because of its lack of other major water sources. The Israeli's however, have made their own claims on the Yarmuk. They believe that because it flows so close

to the Sea of Galilee, as well as the West Bank, they have a right to tap it. Israel has constructed pipes diverting Yarmuk water north and west at a rate of 25 to 70 million cubic meters (mcm) per year.

Other conflicts over water sources have also developed in the region. Since the 1967 war, Israel has controlled the springs and headwaters in the Golan Heights and West Bank, lands it seized from Syria and Jordan. In the Golan, it has exclusive access to the Wazzani Springs and Hasbani River which flow into the Jordan. More importantly, the West Bank sits on Anabta, an underground aquifer which contains 30 percent of the area's renewable water supply. The amount of water being used by the 3 countries is depleting available supplies too rapidly. Israel can only count on 1,600 mcm of water per year but is using 1,820, creating an annual deficit of 220 mcm. Jordan has a stable usage level of 700 mcm per year, but it is also running a deficit, as it taps 850 mcm per year. Both Israel and Jordan have accumulated deficits of around a year's supply. They are using their water reserves 15 percent faster than they are being replenished. The Occupied Territories have a current supply of 550 mcm per year, which is being overdrawn by 75-100 mcm per year. (2)

A number of factors are contributing to these problems. Until the winter of 1991/1992, the region suffered three consecutive droughts. At the time, countries failed to significantly reduce water consumption, which exacerbated the problem. In 1991 and 1992, unusually heavy rains, snows, and winds pelted the region in record amounts for an uncommonly long period. This provided momentary relief but did not fundamentally alter or eliminate this age-old problem. For example, Israel's Sea of Galilee rose sharply and overflowed due to the winter storms, but after stabilizing for a few weeks in the spring, it remained at a dangerously low level.

The major cause of the water shortage problem, however, is the continued rise in population throughout the region. The



Israeli population is increasing at an annual rate of 2 percent, but the recent influx of 500,000 immigrants from the former Soviet Union and Ethiopia intensifies the extremely tight water situation. By 2010, Israel's population will approach 7 million, a 40-percent increase over its 1992 population of 4.5 million. The Jordanian and Palestinian populations are growing at an annual rate of 4 percent, which will double their population in 15 years. Jordan's current population of 2.7 million is projected to reach 7 million in 15 years, and the Palestinian population in the West Bank and Gaza Strip will rise from 1.75 million to 4.2 million (3). Currently, per capita daily water consumption in Israel is 300 liters; in Jordan, 80 liters; and among the Palestinians, 70 liters per day. If these trends persist, Jordan, Israel, and the Occupied Territories could experience emergency water-shortage situations by the year 2005.

Amid the scarcity there are haves and have-nots. Compared with the United States, which in 1990 had a fresh water potential of 10,000 cubic meters (2.6 million gallons) a year for each citizen, Iraq had 5,500, Turkey had 4,000, and Syria had around 2,800. Egypt's potential was only 1,100 gallons, Israel's 460, and Jordan's, a meager 260 (4).

Jordan is facing additional difficulties. Inefficient use of water, as well as overpumping, have become serious issues. Water is wasted through evaporation, cracks in canals, broken water lines, and overuse in irrigation. Overpumping of aquifers has become necessary to supply growing urban needs. Residents of Jordan's capital, Amman, where half the country's population lives, have been exposed to degraded water quality caused by overpumping. Surface and groundwater basins have become polluted.

There are a number of solutions that can help alleviate the water crisis in the Middle East. First, countries in the region must restructure their economies away from a heavy dependence on agriculture. If Israel and Jordan reduce their irrigated agriculture by 40 percent, they can break even on water supply and demand (5). Since the 1960's, Israel has realized that it must reduce agriculture's role in its economy, and it has taken steps to correct the problem through diversification. In 1960, the agricultural sector employed 25 percent of the work force and provided 20 percent of the GDP. In 1992, it employed just 5 percent of the labor force and provided 4 percent of the GDP. Electronics and other industries, and services have taken the place agriculture once played in many parts of the country.

Changes are also being made within Israel's agricultural sector. A more stringent water policy has forced Israel to curtail the cultivation of crops heavily reliant on water. The most significant changes have already occurred in cotton production. Cotton area has been reduced from 65,000 hectares in 1985 to 20,000 in 1992, a 70-percent drop. In addition, many citrus and avocado groves have been largely abandoned in favor of crops that need less water and are more profitable.

Israel has also adopted a number of other conservation measures, which neighboring countries must also continue to pursue if the region is to benefit as a whole. In addition to reducing its dependency on water-intensive crops such as

cotton, it has instituted more effective watering techniques for its farming sector as a whole.

Drip irrigation is used on most farms, especially in the southern part of the country. Israeli scientists have developed micro-irrigation techniques using small pipes and drippers to apply water directly to the roots of crops, thereby reducing water loss through evaporation. Drip irrigation is now used for over 50 percent of Israeli crops, particularly for crops such as carrots and tomatoes that are high-value exports. In addition to improved forms of irrigation, Israel is also in the forefront of developing re-usable water as well as water desalinization.

Approximately 60 percent of Israel's sewage wastewater is treated, injected into the ground, and later used for certain crops. By the year 2000, the Israeli Government hopes that 85 percent of sewage water will be reused. The Israeli Water Commission has stated that within 3 years, desalinated water will be routinely used in households and industries, but not in agriculture. Progress is already being made; the Israeli resort city of Eilat (on the Gulf of Aqaba) is totally supplied by desalinated water.

Other projects are also being planned to help alleviate the situation in the entire region. Israel and Jordan are working jointly to capture and use flood waters from the Jordan River as it flows from the Sea of Galilee to the Dead Sea. Under discussion for the long term are pipelines from the Nile River to the Sinai Peninsula in Egypt and the Negev in Israel (6).

If the water problem in the region will be solved, it will be through the combined efforts of all the nations involved. Israel, Jordan, Syria, and Lebanon must develop equitable ways to share the waterways that divide their countries. The subject of water rights is high on the agenda at the current Middle East peace talks. The principle points of discussion concern the sources of the Jordan River. In the north, Israel and Syria are discussing the distribution of the Hasbani and Dan Rivers, as well as the Baniyas Springs. Israel, Jordan, and Syria are also attempting to divide the Yarmuk River equitably, which will include the completion of the Unity Dam.

Until long-term solutions, such as water sharing, agricultural reform, desalination, and wastewater re-use, are firmly implemented, countries will have to rely on a two-pronged strategy. First, they will be forced to reduce consumption, a process which has already begun. Tighter water restrictions throughout the region will be needed to accomplish this. Second, water will have to be imported from neighboring countries. (7).

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3. Ibid., p.5.

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## Environmental Implications of Farm Policy Reform

Agricultural policy reforms will have important implications for the NAME region's environmental problems. In particular, the need to conserve scarce water and land resources has emerged as one of the most critical issues now facing the region. Water problems are most serious in Libya, Israel, Jordan, and the Gulf countries (including Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and UAE). All face potential water shortages in this decade. In Egypt, increased efficiency in the use of its limited water and land resources forms the core of its agricultural strategy for the 1990's, although recent policy directions have emphasized reduced import dependency rather than optimum resource use.

Excessive water consumption and the degradation of water quality have been partly a response to agricultural policies in the region. Free irrigation water has led to the over-exploitation of groundwater and created salinity and water-logging problems that have lowered crop yields in some areas in Egypt, Syria, and Bahrain. Subsidized fertilizer and pesticide inputs in many countries have contributed to pollution of available water supplies. Rapid population growth and developing industrial needs have also raised regional water demand, while inadequate handling of human and industrial wastes have also accounted for a significant portion of the region's water pollution.

Many countries in the region are adopting policies that rely on market signals to improve the efficiency of water use and to encourage its conservation. These policies include correct pricing of irrigation water, elimination of fertilizer and pesticide subsidies, and incentives for farmers to adopt more efficient irrigation technologies. Egypt, for example, is eliminating pesticide and fertilizer subsidies, except for cotton, and is studying possibilities for the introduction of fees for irrigation water. Jordan and Israel have made major technological advances in the use of drip irrigation and sewage treatment. Tunisia has developed a long-term strategy for soil and water conservation, including the construction of over 1,000 small dams. Saudi Arabia has increased government control over well drilling and instituted stricter regulations for water conservation.

Many countries in the region are dependent upon the same water sources. Assuring adequate water supplies raises difficult issues of riparian rights, and conservation will require regional cooperation. Among the countries that rely on shared water sources are Jordan, Israel, and Syria, which share the Yarmuk River. Jordan, Syria, and Saudi Arabia draw jointly from underground aquifers, and Egypt

and Sudan are both dependent on the Nile. Turkey, Syria, and Iraq share water from the Tigris and Euphrates Rivers. NAME countries have limited availability of arable land. In Egypt, for example, only 3 percent of the land base is arable, resulting in a per capita availability of cultivable land that is among the lowest in the world. Desertification, deforestation, erosion, and urban encroachment are the region's major challenges in managing and conserving its limited land base. Two elements of agricultural policy reforms have implications for improved land management practices.

The first is price policy reform. Artificially low agricultural prices in many countries of the region depressed land values. In turn, this removed incentives to invest in sustainable land management practices and made nonagricultural land uses relatively profitable. Higher farm prices, that would raise farmland values, should provide farmers with a structure of incentives to better manage and conserve their land. Second, land-reform efforts can contribute to improved land management by clarifying proprietary rights to the long-term returns from conservation investments, and by providing credit to finance the implementation of conservation technologies.

Land-reform efforts have been part of agricultural policy reforms in Algeria, Tunisia, and Egypt. In Algeria and Tunisia, State farms have been dismantled and privatized. Egypt has implemented land-rental reform. Land rents, formerly fixed at seven times the land tax, will be market determined by 1997. Egypt's low land rents, combined with laws prohibiting more than 1 year of fallow, created disincentives for the efficient use of land and water by driving owners to cultivate at suboptimal returns.

Increased awareness of environmental issues is one reason that agricultural policy formulation in the region is taking on a longer term perspective. For example, Egypt's farm policy reform has been formulated in the context of a strategy for the 1990's. Tunisia's resource conservation plan extends to the year 2000. Development of a long-term agricultural plan for Yemen is in progress. Longer-term planning has been influenced by the increased urgency of the environmental issues facing the region. These are issues that require immediate changes in consumption of natural resources and investments in natural resource conservation which have long-term, intergenerational benefits. [Mary Burfisher]

## Oil Price Less Critical to NAME's Agricultural Import Capacity

*While petroleum and natural gas export revenues are vital to the economic and political well being of the NAME region, their central role in agricultural imports has diminished. For most of the region's countries, petroleum is the chief source of revenue for investment and agricultural imports. However, as export revenues have fluctuated, food imports have continued their upward trend. Even when revenues were sharply curtailed, food imports were maintained, as they were a rapid and effective way of demonstrating economic prosperity and meeting the population's rising expectations. [Francis Urban and Michael E. Kurtzig]*

The changes in petroleum prices, although vital to the long-term economic development of NAME countries, have diminished in importance in regard to the region's imports of food and agricultural products. During the 1970's, sharp oil price hikes led to a major increase in imports. Since then, the region's import markets have matured, particularly for agricultural products. The countries have the capacity to adjust their export volumes or borrow, whenever necessary, to maintain imports.

### **Agricultural Imports Grow Despite Fluctuation in Oil Revenues**

In the early 1970's, as petroleum prices rose sharply and export earnings from oil and other commodities soared, agricultural imports by the NAME region increased dramatically. This strong correlation diminished in the next decade, with the exception of Saudi Arabia, whose major investment in the agricultural sector has increased food self-sufficiency and somewhat reduced imports (table 46).

In the 1983-1986 period, as the region's foreign exchange earnings plummeted, the effect of lower oil revenues on agricultural imports and investment varied among countries. In general, agricultural imports did not decline. In fact, they increased, although at a slower pace than in the previous decade. Among the region's high-income oil-exporting countries, including Saudi Arabia, Libya and Kuwait, agricultural imports were not greatly affected. This is primarily because their petroleum exports are 10 times greater than their agricultural imports. Algeria, Iran, and Iraq remained large food importers.

Increased incomes since the 1970's have raised expectations of the region's governments and populations. In times of foreign exchange constraints, agricultural imports were maintained, while other government spending was reduced. For instance, since 1983, Saudi Arabia has incurred large annual budgetary and balance of payments deficits. However, agricultural imports have remained between \$4.2 and \$5.4 billion (see appendix table 6).

Table 46--Regression results for impact of oil price changes on NAME import value, 1970-91

Country/year	Agricultural import value	Total import value
	x coefficient	
Total NAME		
1970-79	0.744*	0.814*
1980-91	0.081	0.154
1970-91	0.797*	0.834*
Algeria		
1970-79	0.867	0.777*
1980-91	-0.044	0.310*
1970-91	0.840*	0.720*
Iran		
1970-79	0.968*	0.783*
1980-91	0.399	0.224
1970-91	0.843*	0.659*
Iraq		
1970-79	0.821	1.221*
1980-91	0.371*	0.637*
1970-91	1.040*	1.287*

\* = significant at 95% confidence level.

Because a cheap and steadily available food supply is one of the most visible indicators by which citizens gauge government performance authorities--always wishing to maintain credibility--are usually very reluctant to curtail public expenditures for food programs.

### **Region Holds Majority of Global Oil Reserves**

The region's countries hold nearly 70 percent of the world's oil reserves and well over 30 percent of its natural gas reserves (table 47). The region is the largest net energy exporter and, since the fragmentation of the FSU in 1991, the largest energy producer. After years of spectacular growth of petroleum production during the post-1945 global economic expansion, the region's share in global energy production declined during the oil crisis of the 1970's, dropping from 19 to 15 by 1991,



Table 47--World crude oil and natural gas reserves 1/

Regions/ selected countries	Crude oil		Natural gas	
	Billion barrels	Percent of total	Trillion cu. ft.	Percent of total
North America	82	8.3	335	7.5
Canada	6	0.6	96	2.2
Mexico	51	1.3	71	1.6
United States	25	2.6	167	3.7
Central/S. America	71	7.3	177	3.9
Former Soviet Union	58	5.9	1,802	40.1
Europe	20	2.1	214	4.8
North Africa/ Middle East	675	69.0	1,513	33.2
Algeria	10	1.0	123	2.7
Egypt	4	0.4	12	0.3
Libya	31	3.1	43	1.0
Tunisia	2	0.2	3	0.1
Iran	78	7.9	600	13.4
Iraq	100	10.2	102	2.3
Kuwait	96	9.8	50	1.1
Oman	4	0.4	12	0.3
Qatar	3	0.3	162	3.6
Saudi Arabia	261	26.7	185	4.1
UAE	82	8.5	198	4.3
Other	5	0.5	24	0.5
Sub-Saharan Africa	22	2.3	141	3.1
Nigeria	18	1.8	112	2.5
Other	4	0.5	71	1.6
Far East/Oceania	50	5.1	309	6.1
China	27	2.8	35	0.8
India	6	0.6	26	0.6
Indonesia	9	0.9	85	1.9
Other	8	0.8	164	3.6
Global Total	978	100.0	4,491	100.0

1/ Average of Oil and Gas Journal (1/1/92) and World Oil (1/1/91) as reported in (2).

Source: (2).

and from 44 to 33 percent in crude oil production. However, the region's role as an energy supplier is expanding again.

For the majority of oil exporters, petroleum provides most of their foreign exchange earnings. The share of oil, as a percent of total exports, ranges from well over 90 percent in Iraq (before 1990 and most likely in the future), Oman, and Saudi Arabia, to over 65 percent in Iran, Egypt, Kuwait, United Arab Emirates, and Libya. Only Algeria and Tunisia have lower shares (table 48). However, most of the countries have good international credit ratings and can maintain imports of essential commodities in the medium term, despite any decline in petroleum prices.

Table 48--Share of crude oil exports in total exports, selected oil producing countries, average 1986-88

Countries	Total exports	Oil exports	Oil exports share of total
	Billion	U.S. \$	Percent
North Africa			
Algeria	9.6	4.4	45.8
Egypt	3.0	2.1	70.0
Libya	9.3	6.0	64.5
Tunisia	2.5	0.5	20.0
Middle East			
Iran	13.3	11.2	84.2
Iraq	15	14.8	98.7
Kuwait	9.2	6.1	66.3
Oman	2.7	2.6	96.3
Saudi Arabia	22.3	20.4	91.5
Syria	3.9 1/	2.8	72.0
UAE	14.7	9.9	67.3
Yemen	1.1 1/	1.1	98.0
Other			
Indonesia	18.4	8.4	45.6
Mexico	21.5	7.7	35.8
Nigeria	10.0	8.5	85.0
Venezuela	11.2	5.9	52.7

1/ 1990-92 averages.

Source: (1,6).

### **World Energy Production and Consumption Grow Slowly**

Total world energy production during the past 20 years has grown at the annual rate of 2.2 percent. Simultaneously, global population increased at just over 1.7 percent per year. Thus, on a per caput basis, energy production increased only 0.4 percent per year (fig. 50). Most production and consumption increases occurred early in the period, registering 1.3 percent per year from 1970 to 1979. There has been almost no increase since then. This is explained by rapid increases in oil prices between 1974 and 1983, which raised the prices of all sources of energy. Higher costs eventually forced an improvement in energy efficiency and a slowdown in energy production. Improvements in energy efficiency were also prompted by growing concerns about the environmental effects of fossil fuels.

The region will maintain its dominant position in oil production and trade for the foreseeable future. This position was not affected by the 1980-88 war between Iraq and Iran. Saudi Arabia, with its enormous oil reserves and well developed oil production infrastructure, increased its output from about 8 million barrels per day (mbd) in the mid-1970's to nearly 10 mbd in 1980. Similarly, when Iraq invaded Kuwait in 1990 and Kuwaiti exports came to a sudden halt, Saudi Arabia offset the decline by increasing production from 6.4 mbd in 1990 to well over 8 mbd in 1991. This maintained the region's output (tables 49 and 50).

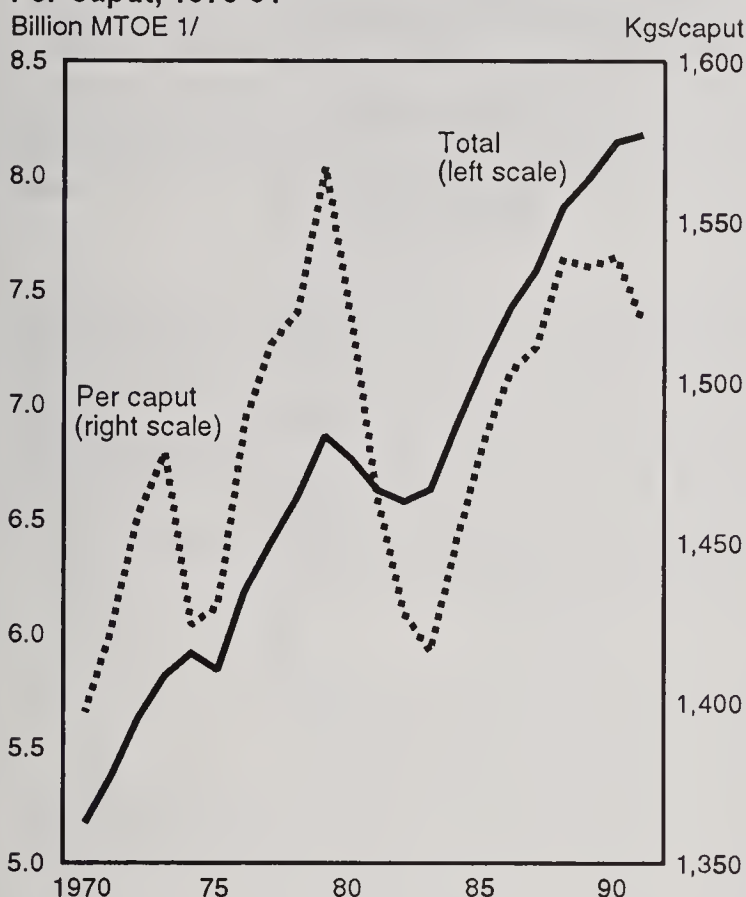
### **Natural Gas Becomes an Increasingly Important Export Earner**

The NAME region's share of natural gas in global energy output increased from 19 percent in 1970 to nearly 22 percent currently. Natural gas is considered one of the cleanest burn-

Figure 50

# World Commercial Energy Production: Total and Per Caput, 1970-91

Billion MTOE 1/



1/ Billion metric tons, oil equivalent.

Table 49--North Africa and the Middle East: Crude oil production, 1979 and 1990-92

Country/region	1979	1990	1991	1992 1/
1,000 barrels per day 2/				
North Africa				
Algeria	1,224	1,175	1,230	1,219
Egypt 3/	525	873	890	NA
Libya	2,092	1,375	1,483	1,481
Tunisia 3/	100	93	109	NA
Middle East				
Iran	3,168	3,088	3,334	3,429
Iraq	3,477	2,040	298	400
Kuwait	2,500	1,175	187	1,025
Oman 3/	295	685	704	NA
Qatar	508	406	390	396
Saudi Arabia	9,532	6,410	8,181	8,438
Syria 3/	166	388	472	480
UAE	1,831	2,117	2,447	2,328
Other	81	35	33	NA
NAME total	25,499	19,860	19,759	20,910
World total	62,357	60,471	60,221	60,178

1/ Preliminary.

2/ Excludes natural gas plant liquids (NGL).

3/ Not an OPEC member.

NA = Not available.

Sources: (1, 4).

ing energy sources, and its deposits are more evenly distributed around the globe than other energy sources. Consequently, its share in global energy consumption is expected to continue to rise. NAME's share in global natural gas output is about 9 percent. The FSU produces about 38 percent; North America, 30 percent; and Europe, 12 percent. Because over a third of the world's gas reserves lie in the NAME region, and extraction facilities there are being expanded, the region's output and exports are expected to increase.

## Energy Trade

Over 40 percent of global oil output is exported, mostly as crude oil. Natural gas and coal exports are 15 and 16 percent,

Table 50--World primary energy production and production shares, by region and selected countries, 1970 and 1991

Region/country	Production		Share of total	
	1970	1991	1970	1991
	Million	MTOE 1/	Percent	
World	5,175	8,181	100	100
North America	1,708	2,102	33	25.7
United States	1,516	1,594	29.3	19.5
Canada	150	324	2.9	3.9
Mexico	41	187	0.8	2.3
Latin America	290	406	5.6	5
Venezuela	212	168	4.1	2.1
Other	78	239	1.5	2.9
Europe	688	1,146	13.3	13.9
United Kingdom	114	215	2.2	2.6
Germany	175	156	3.4	1.9
Norway	5	146	0.1	1.8
Poland	109	109	2.1	1.3
France	47	104	0.8	1.2
Other	243	416	4.7	5.1
Former Soviet Union	875	1,559	16.9	19.1
No. Africa/Middle	978	1,223	18.9	14.8
Saudi Arabia	186	472	3.6	5.8
Iran	207	198	4	2.4
Libya	160	278	3.1	3.4
UAE	40	149	2.8	1.8
Kuwait	145	14	1.5	0.2
Iraq	78	19	1	0.2
Algeria	52	111	1	1.4
Other	305	260	5.9	1.8
Sub-Saharan Africa	109	272	2.1	3.3
Nigeria	57	99	1.1	1.2
South Africa	36	102	0.7	1.2
Other	17	71	0.3	0.9
Far East/Oceania	528	1,474	10.2	18
China	279	713	5.4	8.7
India	62	170	1.2	2.1
Australia	49	163	0.9	2
Indonesia	47	132	0.9	1.6
Other	92	298	1.8	3.6

1/ MTOE = metric tons, oil equivalent.

Source: (1).



respectively, of production. In the case of oil, the surplus-producing countries and net exporters include the NAME region, the FSU, Sub-Saharan Africa, and Latin America (mainly Mexico and Venezuela (fig. 51 and table 51). The Middle East exports over 70 percent of its oil output, while North Africa exports about 60 percent.

Though the region's crude oil exports fell from nearly 19 mbd in 1980 to 9 mbd in 1985, they have grown steadily since then to over 14 mbd today (table 51) and are likely to continue to grow. And, while the region's principal markets have been Western Europe and North America, the fastest growing markets for Middle Eastern oil are the rapidly expanding countries of the Far East.

### Energy Prices and Market Outlook

World energy and crude oil prices are closely related. Oil prices rose rapidly during the oil-crisis years from \$2.65 a barrel in 1973 to a peak of \$34.46 in 1981. Prices then dropped rapidly to a low of \$13.77 in 1988. Since then, prices

have hovered around \$18 a barrel (fig. 52). Other energy prices closely followed the crude-oil price trend.

Projections of oil-price movements vary over a wide range. World Bank and U.S. Department of Energy projections, however, follow a similar path. Both indicate the price will remain at the current low level, or possibly drop slightly through 1995, and then begin to increase through the year 2000. A leading authority on the global petroleum situation forecasts lower prices, in real terms, for the rest of the decade. (5)

The underlying factor for this modest forecast is that Iran, Iraq, and Kuwait need to expand export earnings to rebuild their economies. The Saudis financed a large part of the costly 1990 war against Iraq, incurring large balance of payment deficits that require increasing oil exports. Likewise, the FSU, and particularly Russia, Kazakhstan, and Azerbaijan, need to rebuild their economies and modernize their oil, natural gas, and transport sectors. They are, therefore, likely to pump oil and gas at near capacity.

Table 51--World crude oil net trade

Regions/ selected countries	1980	1985	1989	1990	1991
1,000 barrels per day 1/					
North America	-4,497	-1,357	-4,257	-4,412	-4,812
Canada	-349	203	152	97	499
Mexico	828	1,438	1,278	1,227	1,315
United States	-4,476	-2,007	-5,701	-5,785	-6,626
Central/South America	-1,482	-479	-217	29	NA
Venezuela	-1,286	826	986	1,242	1,405
Other	-196	-347	-769	-1,213	NA
Europe	-12,339	-7,477	-8,532	-8,542	NA
Norway	346	642	1,346	1,394	1,830
United Kingdom	1,163	1,084	212	249	174
Other	-12,156	-5,751	-6,974	-6,899	NA
Former Soviet Union	2,291	2,013	2,283	3,003	NA
No. Africa/Middle East	18,903	9,045	13,381	14,138	NA
Algeria	998	505	620	662	NA
Egypt	310	475	433	422	NA
Libya	1,691	961	997	1,102	1,220
Tunisia	77	75	79	60	NA
Iran	897	1,569	2,120	2,220	2,430
Iraq	2,459	1,123	2,470	1,600	0
Kuwait	1,261	492	1,035	695	140
Oman	279	452	592	627	NA
Oatar	466	289	320	348	NA
Saudi Arabia	9,276	2,535	3,390	4,752	5,820
UAE	1,704	1,108	1,650	1,925	1,944
Other	-515	-533	-325	-173	NA
Sub-Saharan Africa	1,843	1,415	1,976	2,040	NA
Nigeria	1,960	1,268	1,510	1,554	1,670
Other	-117	149	466	486	NA
Far East/Oceania	-5,284	-37,000	-4,862	-5,281	NA
Total exports	30,683	21,750	27,045	28,040	27,705
Total production	63,843	59,118	65,771	66,721	66,761

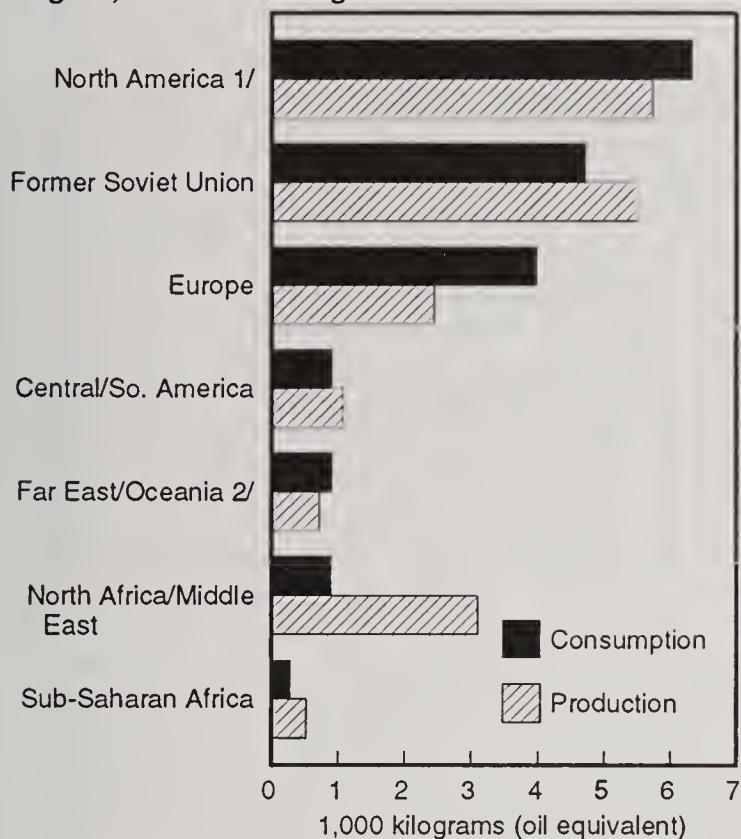
NA = Not available.

1/ Includes natural gas plant liquids.

Source: (1).

Figure 51

### Per Caput Energy Production and Consumption by Region, 1988-91 Average



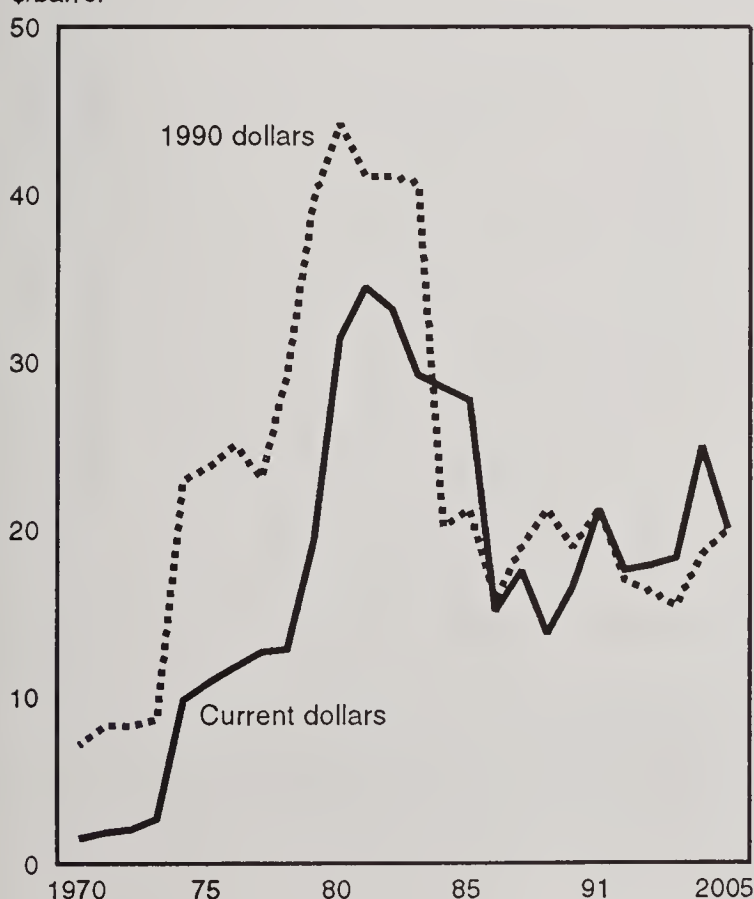
1/ Includes Mexico.

2/ Includes South Asia, Southeast Asia, East Asia, Pacific Islands, Australia, and New Zealand

Figure 52

### World Crude Oil Average Price, 1970-92: Actual and Projected to 2005

\$/barrel



In Europe, energy demand is growing slowly. This is because of sluggish economic growth, but also because natural gas is displacing some oil use. Possibly more importantly, energy efficiency has increased. The surging oil demand in the Far East in recent years, combined with few new oil discoveries in the that region, will likely stabilize prices. It is unclear if the overall increase in demand will be strong enough to boost prices.

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Appendix table 1--Total U.S. exports to North Africa and the Middle East

Country	1984	1985	1986	1987	1988	1989	1990	1991	1992
Million \$									
Algeria	520	430	453	426	730	756	948	727	677
Egypt	2,704	2,323	1,982	2,210	2,332	2,612	2,249	2,720	3,087
Libya	200	311	46	0	0	0	0	0	0
Morocco	526	279	486	383	431	394	497	404	493
Tunisia	434	256	163	119	186	159	179	172	233
North Africa	4,384	3,599	3,130	3,138	3,679	3,921	3,873	4,022	4,490
Bahrain	145	107	194	205	280	489	718	500	489
Cyprus	74	45	54	65	116	109	129	119	166
Iran	162	74	34	54	81	55	166	528	748
Iraq	664	427	527	683	1,157	1,169	732	0	1
Israel	2,194	2,580	2,239	3,130	3,244	2,828	3,201	3,911	4,074
Jordan	299	377	332	365	368	380	309	219	250
Kuwait	635	551	657	505	683	853	401	1,228	1,327
Lebanon	286	141	106	97	123	94	98	165	311
Oman	168	160	160	171	129	170	163	202	257
Qatar	84	64	62	76	98	100	115	147	189
Saudi Arabia	5,564	4,474	3,449	3,373	3,776	3,574	4,035	6,557	7,163
Syria	104	106	59	93	84	91	159	209	168
Turkey	1,249	1,295	1,160	1,482	1,850	2,003	2,253	2,488	2,730
UAE	695	596	493	619	705	1,238	998	1,455	1,552
Yemen	131	51	101	131	86	80	111	188	321
Middle East	12,454	11,048	9,627	11,049	12,780	13,233	13,588	17,918	19,745
Total NAME	16,838	14,647	12,757	14,187	16,459	17,154	17,461	21,940	24,234

Source: U.S. Bureau of the Census.

Appendix table 2--U.S. total imports from North Africa and the Middle East

Country	1984	1985	1986	1987	1988	1989	1990	1991	1992
Million \$									
Algeria	3,638	2,333	1,831	1,999	1,814	1,829	2,645	2,278	1,684
Egypt	169	79	112	465	220	226	396	223	486
Libya	9	44	2	0	0	0	0	0	0
Morocco	34	39	43	49	92	98	109	165	195
Tunisia	30	13	10	69	43	55	32	27	1,183
North Africa	3,880	2,508	1,998	2,582	2,169	2,208	3,182	2,693	3,548
Bahrain	54	84	77	63	98	80	81	100	71
Cyprus	28	14	10	14	34	15	18	14	12
Iran	700	725	569	1,667	9	9	7	260	1
Iraq	124	474	440	495	1,488	2,415	3,015	7	0
Israel	1,751	2,123	2,418	2,639	2,972	3,239	3,313	3,571	3,903
Jordan	4	14	10	11	8	8	11	7	17
Kuwait	260	184	267	521	464	973	570	39	310
Lebanon	7	19	29	33	40	30	24	28	29
Oman	160	46	38	216	76	117	292	131	207
Qatar	48	16	64	3	1	50	53	32	76
Saudi Arabia	3,741	1,907	3,612	4,433	5,620	7,157	9,974	12,071	7,163
Syria	2	3	8	59	37	98	52	27	46
Turkey	433	602	633	821	979	1,371	1,180	1,075	1,183
UAE	1,187	671	336	664	579	684	889	769	872
Yemen	24	2	2	6	147	260	400	166	46
Middle East	8,523	6,884	8,513	11,645	12,552	16,506	19,879	18,296	13,935
Total NAME	12,403	9,392	10,511	14,227	14,721	18,714	23,061	20,989	17,483

Source: U.S. Bureau of Census.



Appendix table 3--The United States: Agricultural exports to North Africa and the Middle East, 1983-92

Country	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Million \$										
Algeria	211	199	228	287	310	596	504	513	486	437
Egypt	970	909	891	811	679	841	989	693	687	766
Libya	6	16	5	4	0	0	0	0	0	0
Morocco	208	396	100	173	218	221	196	145	133	167
Tunisia	114	154	31	73	55	132	103	94	76	90
North Africa	1,509	1,674	1,255	1,348	1,262	1,790	1,792	1,445	1,382	1,460
Bahrain	11	8	7	6	6	7	8	7	16	14
Cyprus	21	30	21	17	20	21	35	39	32	42
Iran	1	2	0	0	1	1	1	2	13	50
Iraq	342	535	326	360	532	808	749	329	0	1
Israel	306	334	277	255	271	329	298	304	308	371
Jordan	79	98	48	49	44	83	165	185	128	108
Kuwait	69	52	41	37	39	39	59	23	16	31
Lebanon	55	29	18	23	40	41	32	27	40	50
Oman	10	8	8	6	5	5	7	8	11	11
Qatar	7	8	4	3	4	5	6	4	5	5
Saudi Arabia	445	482	351	397	483	453	482	564	549	505
Syria	19	38	45	10	12	7	19	34	38	29
Turkey	35	286	63	111	120	122	305	226	214	375
UAE	58	40	44	31	36	44	61	46	71	71
Yemen	74	36	15	30	55	50	44	58	67	119
Middle East	1,532	1,986	1,268	1,335	1,668	2,015	2,271	1,856	1,508	1,782
Total NAME	3,041	3,660	2,523	2,683	2,930	3,805	4,063	3,301	2,890	3,242

Sources: U.S. Bureau of the Census and ERS estimates.

Appendix table 4--Total U.S. agricultural imports from North Africa and the Middle East, 1983-92

Country	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Million \$										
Algeria	0.61	0.60	0.40	0.28	0.71	0.59	0.05	0.06	0.04	0.00
Egypt	7.15	11.10	5.97	6.17	5.15	6.49	8.45	8.99	11.41	11.92
Libya	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Morocco	6.69	7.20	8.01	7.21	8.43	10.44	17.47	23.44	47.09	43.33
Tunisia	2.06	2.36	3.32	4.06	5.98	4.41	3.45	3.31	5.64	5.19
North Africa	16.51	21.25	17.70	17.72	20.27	21.93	29.42	35.80	64.18	60.43
Bahrain	0.00	0.00	0.13	0.21	0.00	0.00	0.00	0.00	0.01	0.00
Iran	30.85	59.29	58.82	23.47	18.99	0.81	0.00	0.05	0.01	0.00
Iraq	2.86	4.10	1.48	0.95	0.89	1.65	2.29	0.56	0.00	0.00
Israel	50.53	58.82	65.88	73.56	64.87	55.66	72.89	78.29	73.70	73.21
Jordan	0.01	0.01	0.10	0.06	0.02	0.10	0.11	0.18	0.21	0.19
Kuwait	0.00	0.02	0.02	0.04	0.00	0.00	0.05	0.54	0.00	0.00
Lebanon	6.38	5.52	7.42	4.40	8.60	7.87	7.33	5.29	4.08	4.95
Oman	0.07	0.05	0.03	0.00	0.16	0.00	0.02	0.07	0.02	0.03
Qatar	0.06	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
Saudi Arabia	0.12	0.02	1.72	0.21	0.06	0.03	0.13	0.09	0.34	1.12
Syria	3.46	0.44	0.86	1.05	2.13	1.78	1.21	0.68	2.16	4.96
Turkey	210.96	216.89	213.33	228.29	231.50	221.41	253.64	297.98	331.84	639.60
UAE	0.37	0.41	1.03	0.28	0.25	0.46	0.60	0.73	0.29	1.07
Yemen	0.08	0.09	0.54	0.13	0.98	0.00	0.25	1.25	1.20	1.94
Mideast	306.68	346.80	352.38	333.77	329.64	291.39	340.01	387.62	415.32	728.17
Total NAME	645.44	734.97	739.14	701.86	698.62	625.02	737.38	844.92	957.53	1576.10

Source: USDA, ERS, Foreign Agricultural Trade of the United States data base, calendar year data.

Appendix table 5--The European Community agricultural exports to North Africa and the Middle East, 1983-92

Country	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Million \$										
Algeria	942	882	853	644	758	824	1,014	1,162	1,213	1,100
Egypt	799	1,042	902	703	826	821	670	751	744	650
Libya	448	462	393	449	385	438	483	615	675	745
Morocco	233	201	358	206	163	193	270	268	278	367
Tunisia	235	216	180	211	168	279	253	384	410	400
North Africa	2,657	2,803	2,686	2,213	2,300	2,555	2,690	3,180	3,320	3,262
Bahrain	57	68	66	63	65	63	68	75	87	95
Cyprus	102	121	115	124	131	143	153	196	210	215
Iran	521	513	366	412	527	462	787	652	888	800
Iraq	284	387	332	193	215	394	341	325	37	40
Israel	166	172	148	222	278	271	281	348	355	360
Jordan	120	157	129	148	156	137	112	186	231	250
Kuwait	208	227	204	211	228	243	275	175	72	110
Lebanon	203	229	164	171	137	196	199	212	218	228
Oman	79	87	92	90	97	97	99	131	145	160
Oatar	55	53	58	53	56	50	53	59	65	60
Saudi Arabia	1,168	1,430	1,092	1,241	1,194	1,254	1,207	1,259	1,432	1,480
Syria	184	200	207	204	181	162	199	326	375	395
Turkey	99	218	210	159	332	241	384	981	921	980
UAE	263	265	256	285	346	355	423	537	627	700
Yemen	264	301	285	216	169	238	207	285	296	259
Middle East	3,959	4,647	3,940	3,952	4,234	4,487	4,945	5,937	6,157	6,292
Total NAME	6,616	7,450	6,626	6,165	6,534	7,042	7,635	9,117	9,477	9,554

Sources: Nimex and UN trade runs and ERS estimates for 1989 and 1990.

Appendix table 6--North Africa and the Middle East total agricultural imports, 1983-92

Country	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992 1/
Million \$										
Algeria	2,509	2,635	2,478	2,379	2,495	2,629	3,354	3,225	3,250	2,975
Egypt	3,887	4,084	3,976	3,789	3,876	4,023	4,044	3,934	3,470	3,520
Libya	1,237	1,241	1,085	1,173	1,095	1,097	1,293	1,416	1,575	1,650
Morocco	996	876	746	702	671	723	819	799	841	1,135
Tunisia	524	596	426	450	398	674	710	651	712	750
North Africa	9,153	9,432	8,711	8,493	8,535	9,146	10,220	10,025	9,848	10,030
Bahrain	243	278	253	244	254	260	276	273	280	321
Cyprus	203	200	182	194	192	195	226	254	276	286
Iran	2,996	3,079	2,645	1,991	2,485	2,505	3,176	3,120	2,985	2,780
Iraq	2,271	2,748	2,278	2,094	2,377	2,720	2,885	1,776	925	980
Israel	924	981	920	870	929	1,138	1,188	1,201	1,343	1,380
Jordan	668	650	685	578	678	702	782	753	890	975
Kuwait	1,225	1,200	1,034	1,023	1,033	1,096	1,201	773	285	420
Lebanon	602	616	561	573	521	623	628	556	655	675
Oman	381	413	427	393	387	430	443	488	589	620
Oatar	210	223	209	223	224	249	224	296	288	295
Saudi Arabia	5,182	5,351	4,165	4,244	4,387	4,176	4,478	4,845	4,920	4,980
Syria	878	980	800	498	424	447	543	766	688	730
Turkey	286	746	746	767	1,206	939	1,613	2,262	1,606	1,730
UAE	1,030	1,086	1,112	1,207	1,322	1,357	1,742	1,706	1,783	1,925
Yemen	758	798	540	580	485	671	676	805	865	950
Middle East	17,857	19,349	16,557	15,479	16,904	17,508	20,081	19,874	18,378	19,047
Total NAME	27,010	28,781	25,268	23,972	25,439	26,654	30,301	29,899	28,226	29,077

1/ Estimate.

Sources: FAO Trade Yearbooks, EC Nimex, United Nations trade runs and ERS estimates.



Appendix table 7--The United States: Estimated share of North Africa and the Middle East agricultural imports, 1983-92

Country	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Percent										
Algeria	8.4	7.6	9.2	12.1	12.4	22.7	15.0	15.9	15.0	14.7
Egypt	25.0	22.3	22.4	21.4	17.5	20.9	24.5	17.6	19.8	21.8
Libya	0.5	1.3	0.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Morocco	20.9	45.2	13.4	24.6	32.5	30.6	23.9	18.1	15.8	14.7
Tunisia	21.8	25.8	7.3	16.2	13.8	19.6	14.5	14.4	10.7	12.0
North Africa	16.5	17.7	14.4	15.9	14.8	19.6	17.5	14.4	14.0	14.6
Bahrain	4.5	2.9	2.8	2.5	2.4	2.7	2.9	2.6	5.7	4.4
Cyprus	10.3	15.0	11.5	8.8	10.4	10.8	15.5	15.4	11.6	14.7
Iran	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.4	1.8
Iraq	15.1	19.5	14.3	17.2	22.4	29.7	26.0	18.5	0.0	0.1
Israel	33.1	34.0	30.1	29.3	29.2	28.9	25.1	25.3	22.9	26.9
Jordan	11.8	15.1	7.0	8.5	6.5	11.8	21.1	24.6	14.4	11.1
Kuwait	5.6	4.3	4.0	3.6	3.8	3.6	4.9	3.0	5.6	7.4
Lebanon	9.1	4.7	3.2	4.0	7.7	6.6	5.1	4.9	6.1	7.4
Oman	2.6	1.9	1.9	1.5	1.3	1.2	1.6	1.6	1.9	1.8
Oatar	3.3	3.6	1.9	1.3	1.8	2.0	2.7	1.4	1.7	1.7
Saudi Arabia	8.6	9.0	8.4	9.4	11.0	10.8	10.8	11.6	11.2	10.1
Syria	2.2	3.9	5.6	2.0	2.8	1.6	3.5	4.4	5.5	4.0
Turkey	12.2	38.3	8.4	14.5	10.0	13.0	18.9	10.0	13.3	21.7
UAE	5.6	3.7	4.0	2.6	2.7	3.2	3.5	2.7	4.0	3.7
Yemen	9.8	4.5	2.8	5.2	11.3	7.5	6.5	7.2	7.7	12.5
Middle East	8.6	10.3	7.7	8.6	9.9	11.5	11.3	9.3	8.2	9.4
Total NAME	11.3	12.7	10.0	11.2	11.5	14.3	13.4	11.0	10.2	11.1

Sources: U.S. Bureau of the Census and ERS estimate for 1992.

Appendix table 8--The European Community: Estimated share of North Africa and the Middle East imports, 1983-92

Country	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Percent										
Algeria	37.5	33.5	34.4	27.1	30.4	31.3	30.2	36.0	37.3	37.0
Egypt	20.6	25.5	22.7	18.6	21.3	20.4	16.6	19.1	21.4	18.5
Libya	36.2	37.2	36.2	38.3	35.2	39.9	37.4	43.4	42.9	45.2
Morocco	23.4	22.9	48.0	29.3	24.3	26.7	33.0	33.5	33.1	32.3
Tunisia	44.8	36.2	42.3	46.9	42.2	41.4	35.6	59.0	57.6	53.3
North Africa	29.0	29.7	30.8	26.1	26.9	27.9	26.3	31.7	33.7	32.5
Bahrain	23.5	24.5	26.1	25.8	25.6	24.2	24.6	27.5	31.1	29.6
Cyprus	50.2	60.5	63.2	63.9	68.2	73.3	67.7	77.2	76.1	75.2
Iran	17.4	16.7	13.8	20.7	21.2	18.4	24.8	20.9	29.7	28.8
Iraq	12.5	14.1	14.6	9.2	9.0	14.5	11.8	18.3	4.0	4.1
Israel	18.0	17.5	16.1	25.5	29.9	23.8	23.7	29.0	26.4	26.1
Jordan	18.0	24.2	18.8	25.6	23.0	19.5	14.3	24.7	26.0	25.6
Kuwait	17.0	18.9	19.7	20.6	22.1	22.2	22.9	22.6	25.3	26.2
Lebanon	33.7	37.2	29.2	29.8	26.3	31.5	31.7	38.1	33.3	33.8
Oman	20.7	21.1	21.5	22.9	25.1	22.6	22.3	26.8	24.6	25.8
Oatar	26.2	23.8	27.8	23.8	25.0	20.1	23.7	19.9	22.6	20.3
Saudi Arabia	22.5	26.7	26.2	29.2	27.2	30.0	27.0	26.0	29.1	29.7
Syria	21.0	20.4	25.9	41.0	42.7	36.2	36.6	42.6	54.5	54.1
Turkey	34.6	29.2	28.2	20.7	27.5	25.7	23.8	43.4	57.3	56.6
UAE	25.5	24.4	23.0	23.6	26.2	26.2	24.3	31.5	35.2	36.4
Yemen	24.5	27.4	40.0	27.6	25.2	27.0	23.2	23.6	22.9	16.8
Middle East	22.2	24.0	23.8	25.5	25.0	25.6	24.6	29.9	33.5	33.0
Total NAME	24.5	25.9	26.2	25.7	25.7	26.4	25.2	30.5	33.6	32.9

Sources: Nimex and UN trade runs and ERS estimate for 1992.

Appendix table 9--North Africa and the Middle East: Imports of wheat and wheat flour, 1984-92 1/

Country	1984	1985	1986	1987	1988	1989	1990	1991	1992 2/
1,000 tons									
Algeria	3,000	3,100	3,496	3,987	4,340	4,300	4,808	4,000	3,900
Egypt	7,040	7,082	6,609	7,071	7,100	7,400	6,300	6,237	6,000
Libya	640	650	600	655	700	780	1,023	1,282	1,285
Morocco	2,643	2,400	1,571	2,380	1,500	900	1,680	1,537	2,818
Tunisia	1,035	800	1,200	857	1,336	1,325	960	622	520
North Africa	14,358	14,032	13,476	14,950	14,976	14,705	14,771	13,678	14,523
Bahrain	43	45	50	54	55	57	61	50	50
Cyprus	88	81	85	90	98	99	106	117	118
Iran	3,743	2,740	2,540	4,005	3,700	5,000	5,120	3,000	2,000
Iraq	3,342	2,700	2,825	3,200	3,000	3,750	1,878	1,800	2,005
Israel	555	638	570	580	596	673	764	822	730
Jordan	467	483	450	496	596	600	800	833	868
Kuwait	301	330	325	310	270	265	205	150	168
Lebanon	359	360	390	400	380	375	306	400	427
Oman	110	125	135	140	145	141	170	199	224
Qatar	36	31	39	42	43	42	50	55	50
Saudi Arabia	481	115	150	147	138	133	325	181	182
Syria	1,216	1,200	930	880	830	1,356	1,675	1,400	1,280
Turkey	978	1,300	850	909	830	3,000	2,181	150	1,000
UAE	175	205	215	223	220	221	255	290	275
Yemen	958	1,016	1,022	1,141	1,040	1,023	1,571	1,682	1,900
Middle East	12,852	11,369	10,576	12,617	11,941	16,735	15,467	11,129	11,277
Total NAME	27,210	25,401	24,052	27,567	26,917	31,440	30,238	24,807	25,800

1/ Flour converted to wheat equivalent at 1.39.

2/ ERS estimate.

Sources: USDA, FAS, PS&amp;D database, April 1993.

Appendix table 10--North Africa and the Middle East: Imports of rice, 1984-92

Country	1984	1985	1986	1987	1988	1989	1990	1991	1992 1/
1,000 tons									
Algeria	30	33	38	40	50	70	57	70	67
Egypt	2	5	75	20	17	12	10	2	0
Libya	53	56	60	66	70	75	82	109	140
Morocco	12	10	16	14	17	33	32	45	5
Tunisia	4	4	6	6	14	3	4	3	3
North Africa	101	108	195	146	168	193	185	229	215
Bahrain	19	22	25	27	26	27	31	31	32
Cyprus	2	3	5	5	5	6	11	9	12
Iran	710	570	550	1,000	400	1,000	850	615	950
Iraq	525	550	553	540	603	542	360	250	500
Israel	49	60	60	64	66	67	57	64	68
Jordan	40	50	88	89	110	120	144	112	122
Kuwait	118	114	110	112	90	116	80	75	100
Lebanon	25	27	35	36	37	39	43	55	56
Oman	135	140	147	150	105	66	102	81	100
Qatar	23	25	27	24	25	26	20	27	25
Saudi Arabia	515	429	509	510	525	530	582	525	625
Syria	110	170	130	129	140	143	140	150	175
Turkey	55	91	75	80	190	250	236	266	300
UAE	220	210	208	240	280	360	310	320	260
Yemen	111	117	151	153	130	165	144	158	198
Middle East	2,657	2,578	2,673	3,159	2,732	3,457	3,110	2,738	3,523
Total NAME	2,758	2,686	2,868	3,305	2,900	3,650	3,295	2,967	3,738

1/ ERS estimate.

Sources: USDA, FAS, PS&amp;D database, April 1993.



Appendix table 11--North Africa and the Middle East: Imports of coarse grains, 1984-92

Country	1984	1985	1986	1987	1988	1989	1990	1991	1992 1/
1,000 tons									
Algeria	970	950	1,150	1,400	1,700	2,000	1,325	925	1,265
Egypt	1,787	1,900	2,140	2,315	1,500	1,625	2,060	1,560	1,325
Libya	340	370	420	450	470	500	1,155	725	850
Morocco	300	250	180	219	130	100	170	367	500
Tunisia	250	220	370	320	584	550	433	393	360
North Africa	3,647	3,690	4,260	4,704	4,384	4,775	5,143	3,970	4,300
Bahrain	20	25	30	35	33	46	40	21	25
Cyprus	370	400	420	430	380	350	495	575	600
Iran	1,300	1,100	1,700	2,035	1,800	1,900	1,600	1,560	1,450
Iraq	960	770	500	480	720	880	627	17	12
Israel	1,171	1,012	1,000	1,030	1,100	900	926	925	950
Jordan	290	300	320	330	425	635	840	725	940
Kuwait	220	210	230	260	325	360	340	150	100
Lebanon	180	200	140	150	180	150	140	200	220
Oman	30	31	58	110	40	45	96	133	170
Qatar	36	40	42	44	50	50	47	46	52
Saudi Arabia	6,672	6,340	7,350	8,787	5,000	4,500	4,950	5,177	6,573
Syria	285	350	200	240	190	150	360	466	130
Turkey	849	175	200	230	405	1,250	872	276	280
UAE	100	120	125	150	170	175	150	155	225
Yemen	59	62	64	66	46	180	125	150	180
Middle East	12,542	11,135	12,379	14,377	10,864	11,571	11,608	10,576	11,907
Total NAME	16,189	14,825	16,639	19,081	15,248	16,346	16,751	14,546	16,207

1/ ERS estimate.

Sources: USDA, FAS, PS&amp;D database, April 1993.

Appendix table 12--Per capita Gross National Product (GNP) by country, 1980-91

Country/region	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
US \$												
Algeria	1,950	2,250	2,420	2,430	2,480	2,610	2,620	2,650	2,580	2,520	2,350	1,980
Egypt	500	550	600	620	640	670	680	690	660	640	610	610
Libya	9,760	9,310	9,260	8,590	7,340	6,810	5,810	5,730	5,350	5,330	---	---
Morocco	930	880	860	730	660	620	660	680	840	900	970	1,030
Tunisia	1,280	1,380	1,310	1,240	1,210	1,180	1,110	1,190	1,240	1,280	1,440	1,500
North Africa												
Bahrain	---	---	8,830	9,440	9,750	8,260	7,810	6,850	6,200	6,760	6,830	7,130
Cyprus	---	---	---	---	---	---	4,500	5,280	6,440	7,330	8,230	8,640
Iran	1,950	2,530	3,200	3,530	3,750	4,030	3,920	3,610	3,050	2,590	2,500	2,170
Iraq	3,030	2,130	2,290	3,100	3,040	2,520	2,250	2,470	2,400	2,720	2,140	---
Israel	5,390	6,260	6,510	6,790	6,740	6,610	6,840	7,670	9,050	9,900	11,160	11,950
Jordan	---	---	---	---	---	1,940	2,250	2,200	2,090	1,660	1,290	1,060
Kuwait	17,830	20,210	18,970	18,560	17,590	15,110	15,770	14,710	14,710	16,210	---	---
Lebanon	---	---	---	---	---	---	---	---	---	---	---	---
Oman	3,650	5,800	7,020	7,110	7,250	7,410	6,400	5,540	4,850	5,110	5,680	6,120
Qatar	31,160	36,670	30,380	23,410	22,110	19,190	15,410	15,240	14,790	14,900	14,210	14,770
Saudi Arabia	10,420	13,060	14,320	12,830	10,210	8,700	7,840	6,690	6,490	6,450	7,070	7,820
Syria	1,450	1,690	1,780	1,810	1,730	1,750	1,470	1,200	1,100	890	1,000	1,160
Turkey	1,400	1,450	1,300	1,180	1,110	1,080	1,110	1,220	1,290	1,370	1,640	1,780
UAE	30,190	31,750	28,820	25,330	24,380	22,360	16,370	16,720	16,490	18,500	19,910	20,140
Yemen	---	---	---	---	---	---	---	---	---	---	---	540
Middle East												

--- = not available.

Source: World Bank, STARS database.

Appendix table 13--Population: North Africa and the Middle East, 1980-92

Country/region	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Population													
	Millions												
Algeria	18.9	19.5	20.1	20.8	21.5	22.2	22.8	23.5	24.1	24.7	25.4	26.0	26.7
Egypt	41.7	42.9	44.0	45.1	46.2	47.3	48.8	50.0	51.3	52.5	53.8	55.1	56.4
Libya	3.0	3.2	3.4	3.5	3.6	3.7	3.7	3.8	4.0	4.1	4.2	4.4	4.5
Morocco	20.5	21.0	21.5	22.0	22.5	23.0	23.5	24.0	24.5	25.1	25.6	26.2	26.7
Tunisia	6.5	6.6	6.7	6.9	7.0	7.2	7.4	7.6	7.8	7.9	8.1	8.3	8.4
North Africa	90.6	93.2	95.8	98.3	100.8	103.4	106.3	109.0	111.7	114.4	117.1	119.9	122.7
Bahrain	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.6
Cyprus	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Iran	38.8	40.3	41.8	43.3	44.8	46.3	49.3	51.2	53.1	55.0	57.0	59.1	61.2
Iraq	13.2	13.7	14.2	14.7	15.2	15.7	16.2	16.5	17.1	17.7	18.4	17.9	18.5
Israel	3.7	3.8	3.9	3.8	3.9	3.9	4.0	4.0	4.1	4.1	4.3	4.5	4.7
Jordan	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.3	3.4	3.6
Kuwait	1.4	1.4	1.5	1.6	1.6	1.7	1.8	1.9	2.0	2.0	2.1	0.8	1.4
Lebanon	3.1	3.1	3.2	3.2	3.2	3.2	3.2	3.2	3.3	3.3	3.3	3.4	3.4
Oman	1.0	1.0	1.1	1.1	1.2	1.2	1.3	1.3	1.4	1.4	1.5	1.5	1.6
Qatar	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.5	0.5
Saudi Arabia	10.1	10.8	11.4	12.1	12.8	13.5	14.1	14.7	15.3	16.0	16.3	16.5	17.1
Syria	8.7	9.1	9.4	9.8	10.1	10.5	10.9	11.4	11.8	12.2	12.7	13.2	13.7
Turkey	45.1	46.3	47.4	48.6	49.8	51.0	52.2	53.4	54.6	55.9	57.1	58.4	59.6
UAE	1.0	1.1	1.2	1.3	1.4	1.6	1.7	1.8	2.0	2.1	2.3	2.4	2.5
Yemen	7.3	7.5	7.7	7.9	8.1	8.4	8.6	8.9	9.2	9.4	9.7	10.1	10.4
Middle East	136.9	141.6	146.4	151.1	156.0	161.1	167.7	172.8	178.4	184.1	189.7	192.9	199.4
Total NAME	227.5	234.9	242.2	249.4	256.9	264.5	274.0	281.8	290.1	298.5	306.9	312.8	322.1
Growth rates													
	Percent												
Algeria	3.2	3.3	3.3	3.2	3.2	2.9	2.8	2.6	2.6	2.5	2.5	2.5	2.4
Egypt	2.9	2.6	2.4	2.4	2.4	3.2	2.5	2.5	2.4	2.4	2.3	2.3	2.3
Libya	4.9	5.1	4.4	3.8	1.4	1.1	3.2	3.1	3.1	3.1	3.0	3.0	2.9
Morocco	2.4	2.4	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1
Tunisia	2.5	2.0	1.9	2.4	2.5	2.5	2.4	2.3	2.2	2.2	2.1	2.0	2.0
North Africa	2.8	2.9	2.7	2.6	2.6	2.5	2.8	2.5	2.4	2.4	2.4	2.3	2.3
Bahrain	4.5	4.5	4.4	4.4	4.1	3.8	3.7	3.7	3.6	3.4	3.1	3.1	3.0
Cyprus	1.2	1.0	1.3	1.3	1.2	1.2	1.1	1.0	1.1	1.1	1.0	1.0	1.0
Iran	3.8	3.7	3.5	3.4	3.3	6.3	3.7	3.6	3.6	3.6	3.5	3.6	3.5
Iraq	3.5	3.4	3.3	3.4	3.5	3.5	1.8	3.4	3.6	3.8	-2.8	3.0	3.7
Israel	1.7	1.5	-1.0	1.6	1.4	1.2	1.3	1.4	1.5	3.7	5.3	4.5	3.5
Jordan	4.2	4.1	4.0	4.0	4.1	4.1	4.1	4.1	4.2	4.2	4.2	4.2	4.1
Kuwait	4.5	4.5	4.5	4.5	4.5	4.6	4.5	4.3	4.0	3.8	-92.5	49.6	20.8
Lebanon	0.2	0.6	0.5	0.5	0.4	0.5	0.7	0.8	1.0	1.2	1.4	1.5	1.7
Oman	5.2	4.9	4.6	4.3	4.0	3.7	3.6	3.5	3.5	3.5	3.5	3.5	3.5
Qatar	5.0	4.0	11.8	10.3	9.2	8.3	5.3	4.7	4.5	4.1	3.7	3.3	3.0
Saudi Arabia	6.1	5.7	5.6	5.6	5.5	4.7	4.1	4.1	4.1	1.8	1.4	3.3	3.3
Syria	4.3	3.7	3.7	3.7	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
Turkey	2.5	2.5	2.4	2.4	2.4	2.4	2.3	2.3	2.3	2.2	2.2	2.1	2.1
UAE	9.5	9.0	8.9	8.9	8.8	8.7	7.5	7.0	6.6	6.2	5.8	5.5	5.2
Yemen	2.6	2.6	2.7	2.8	2.8	2.9	3.0	3.0	3.1	3.1	3.2	3.3	3.3
Middle East	3.2	3.4	3.3	3.2	3.2	3.2	4.0	3.0	3.2	3.2	3.0	1.7	3.3
Total NAME	3.0	3.2	3.1	2.9	3.0	2.9	3.5	2.8	2.9	2.9	2.8	1.9	2.9

Source: U.S. Bureau of the Census.



Appendix table 14--Supply and use of wheat in North Africa and the Middle East, 1988-92

Country and year	Area harvested	Yield	Production	Imports	Exports	Consumption	Ending Stocks	Feed	Self- suffi- ciency ratio 1/	Population	Per capita consump- tion
	1,000 ha	tons/ha	-----1,000 tons-----					percent	million	kilograms	
Middle East											
1988	18,158	4.39	30,133	11,623	4,321	37,054	8,733	1,607	81.3	178.4	207.7
1989	17,352	4.02	23,677	17,794	1,808	37,994	10,402	1,507	62.3	184.1	206.4
1990	18,622	4.31	30,958	11,801	2,255	38,446	12,460	1,385	80.5	189.7	202.6
1991	19,494	1.71	33,271	10,160	8,413	38,466	9,012	1,565	86.5	192.9	199.4
1992	20,138	1.72	34,642	8,110	4,750	37,967	9,047	965	91.2	199.4	190.4
Cyprus											
1988	14	2.00	28	52	0	80	0	0	35.0	0.7	116.4
1989	13	0.77	10	49	0	59	0	0	16.9	0.7	84.9
1990	5	1.00	5	73	0	78	0	0	6.4	0.7	111.1
1991	7	1.00	7	117	0	124	0	0	5.6	0.7	174.8
1992	6	1.17	7	85	0	92	0	0	7.6	0.7	128.4
Gulf States 2/											
1988	0	0	0	537	0	537	0	0	0.0	6.2	86.4
1989	0	0	0	724	0	724	0	0	0.0	6.5	111.1
1990	0	0	0	663	0	663	0	0	0.0	6.8	97.2
1991	0	0	0	487	0	487	0	0	0.0	5.8	84.5
1992	0	0	0	615	0	615	0	0	0.0	6.5	94.3
Iran											
1988	6,150	1.18	7,265	3,200	0	10,365	3,115	500	70.1	53.1	195.3
1989	6,260	0.96	6,010	5,200	0	11,635	2,690	500	51.7	55.0	211.5
1990	6,500	1.23	8,000	4,000	0	11,200	3,490	500	71.4	57.0	196.5
1991	6,650	1.34	8,900	2,500	0	11,265	3,625	500	79.0	59.1	190.8
1992	7,200	1.42	10,200	2,000	0	11,800	4,025	0	86.4	61.2	192.9
Iraq											
1988	1,041	0.89	929	3,000	0	4,000	1,014	400	23.2	17.1	233.7
1989	587	0.84	491	3,400	0	3,900	1,005	200	12.6	17.7	219.9
1990	1,200	1.00	1,200	124	0	2,304	25	50	52.1	18.4	125.0
1991	1,800	0.83	1,500	1,705	0	2,905	325	0	51.6	17.9	162.1
1992	1,750	0.80	1,400	500	0	2,200	25	0	63.6	18.5	119.2
Israel											
1988	93	2.27	211	600	0	913	91	80	23.1	4.1	223.3
1989	90	2.23	201	650	0	838	104	130	24.0	4.1	202.0
1990	90	2.89	260	764	0	824	304	220	31.6	4.3	191.5
1991	90	2.11	190	822	0	1,066	250	350	17.8	4.5	234.9
1992	85	2.82	240	730	0	995	225	250	24.1	4.7	209.6
Jordan											
1988	124	1.31	162	456	20	591	162	0	27.4	3.0	196.3
1989	90	0.96	86	516	35	457	272	0	18.8	3.1	145.6
1990	69	1.29	89	861	50	930	242	0	9.6	3.3	284.1
1991	51	1.14	58	1,215	50	1,225	240	0	4.7	3.4	359.0
1992	90	0.89	80	750	50	850	170	0	9.4	3.6	238.9
Lebanon											
1988	10	1.40	14	133	0	147	0	15	9.5	3.3	45.0
1989	10	1.40	14	116	0	130	0	15	10.8	3.3	39.4
1990	10	2.00	20	154	0	174	0	15	11.5	3.3	52.1
1991	10	1.80	18	355	0	373	0	15	4.8	3.4	110.1
1992	10	1.80	18	350	0	368	0	15	4.9	3.4	107.0
Saudi Arabia											
1988	726	4.50	3,267	154	1,956	1,465	750	0	223.0	15.3	95.5
1989	708	4.64	3,285	160	1,583	1,532	1,080	0	214.4	16.0	95.9
1990	744	4.66	3,464	184	1,661	1,567	1,500	0	221.1	16.3	96.3
1991	740	5.22	3,861	325	2,425	1,645	1,616	0	234.7	16.5	99.7
1992	740	5.54	4,100	180	2,400	1,650	1,846	0	248.5	17.1	96.8

Continued--

Appendix table 14--Supply and use of wheat in North Africa and the Middle East, 1988-92--Continued

Country and year	Area harvested	Yield	Production	Imports	Exports	Consumption	Ending Stocks	Feed	Self-sufficiency ratio 1/	Population	Per capita consumption
	1,000 ha	tons/ha	-----1,000 tons-----					percent	million	kilograms	
Syria											
1988	1,100	1.88	2,067	804	0	2,624	501	250	78.8	11.8	222.5
1989	744	1.21	900	1,171	0	2,221	351	250	40.5	12.2	181.3
1990	1,100	1.57	1,726	1,545	0	2,870	752	200	60.1	12.7	225.5
1991	1,269	1.69	2,140	792	0	2,797	887	200	76.5	13.2	211.6
1992	1,380	2.03	2,800	500	0	3,100	1,087	200	90.3	13.7	225.8
Turkey											
1988	8,750	1.83	16,000	607	2,345	14,062	3,100	362	113.8	54.6	257.4
1989	8,700	1.44	12,500	3,762	190	14,272	4,900	412	87.6	55.9	255.4
1990	8,750	1.83	16,000	291	544	14,500	6,147	400	110.3	57.1	253.8
1991	8,800	1.88	16,500	160	5,938	14,800	2,069	500	111.5	58.4	253.5
1992	8,800	1.78	15,700	1,000	2,300	14,800	1,669	500	106.1	59.6	248.2
Yemen											
1988	75	2.73	95	1,040	0	1,135	0	0	8.4	9.2	123.9
1989	75	2.65	90	1,023	0	1,113	0	0	8.1	9.4	117.8
1990	77	2.65	97	1,571	0	1,668	0	0	5.8	9.7	171.1
1991	77	1.26	97	1,682	0	1,779	0	0	5.5	10.1	176.8
1992	77	1.26	97	1,400	0	1,497	0	0	6.5	10.4	144.0
North Africa											
1988	4,556	1.72	7,828	14,716	0	22,669	1,498	1,230	34.5	111.7	203.0
1989	5,577	1.58	8,825	14,199	0	22,983	1,539	1,030	38.4	114.4	200.9
1990	6,192	1.61	9,952	14,240	0	23,967	1,764	1,305	41.5	117.1	204.6
1991	6,345	2.07	13,127	13,221	0	25,225	2,887	1,300	52.0	119.9	210.4
1992	6,077	1.59	9,683	14,700	0	25,006	2,264	1,000	38.7	122.7	203.8
Algeria											
1988	1,023	0.60	615	4,200	0	4,942	73	50	12.4	24.1	205.0
1989	1,470	0.78	1,150	4,160	0	5,170	213	130	22.2	24.7	209.0
1990	1,550	0.50	775	4,600	0	5,205	383	105	14.9	25.4	205.1
1991	1,570	1.11	1,740	4,000	0	5,523	600	150	31.5	26.0	212.3
1992	1,700	1.04	1,770	3,900	0	5,700	570	150	31.1	26.7	213.7
Egypt											
1988	597	4.76	2,839	7,408	0	10,247	800	1,000	27.7	51.3	199.8
1989	630	5.05	3,183	7,258	0	10,441	800	800	30.5	52.5	198.7
1990	740	5.79	4,286	5,668	0	10,254	500	1,000	41.8	53.8	190.6
1991	760	5.90	4,482	5,781	0	10,263	500	1,000	43.7	55.1	186.3
1992	878	5.26	4,617	6,000	0	10,450	667	700	44.2	56.4	185.4
Libya											
1988	320	0.42	135	750	0	885	0	0	15.3	4.0	222.9
1989	290	0.50	145	748	0	893	0	0	16.2	4.1	218.0
1990	300	0.52	155	1,009	0	1,164	0	0	13.3	4.2	275.6
1991	300	0.60	180	1,385	0	1,565	0	0	11.5	4.4	359.5
1992	290	0.52	150	1,000	0	1,150	0	0	13.0	4.5	256.4
Morocco											
1988	2,317	1.73	4,019	1,378	0	5,265	387	180	76.3	24.5	214.5
1989	2,630	1.49	3,927	1,069	0	5,015	368	100	78.3	25.1	200.0
1990	2,720	1.33	3,614	1,941	0	5,625	298	200	64.2	25.6	219.6
1991	2,642	1.87	4,939	1,532	0	5,732	1,037	150	86.2	26.2	219.1
1992	2,228	0.70	1,562	3,200	0	5,622	177	150	27.8	26.7	210.5
Tunisia											
1988	299	0.74	220	980	0	1,330	238	0	16.5	7.8	171.4
1989	557	0.75	420	964	0	1,464	158	0	28.7	7.9	184.6
1990	882	1.27	1,122	1,022	0	1,719	583	0	65.3	8.1	212.1
1991	1,073	1.66	1,786	523	0	2,142	750	0	83.4	8.3	258.8
1992	981	1.61	1,584	600	0	2,084	850	0	76.0	8.4	246.8

1/ Production/consumption. A self-sufficiency ratio greater than 100 is due to stock changes. 2/ Bahrain, Kuwait, Oman, Qatar, United Arab Emirates.

Source: USDA Foreign Agricultural Service, Production, Supply and Utilization database, April 1993.



Appendix table 15--Supply and use of corn in North Africa and the Middle East, 1988-92

Country and year	Area harvested	Yield	Production	Imports	Exports	Consumption	Ending Stocks	Feed	Self-sufficiency ratio 1/	Population	Per capita consumption
	1,000 ha	tons/ha	-----1,000 tons-----						percent	million	kilograms
Middle East											
1988	770	4.81	2,557	3,388	0	5,957	336	4,930	42.9	178.4	33.4
1989	839	3.92	2,271	4,429	13	6,709	314	5,506	33.9	184.1	36.4
1990	858	4.24	2,496	2,922	8	5,542	182	4,590	45.0	189.7	29.2
1991	803	3.23	2,592	3,246	10	5,828	182	4,966	44.5	192.9	30.2
1992	835	3.24	2,702	3,150	10	5,757	267	4,940	46.9	199.4	28.9
Cyprus											
1988	0	0.00	0	115	0	115	0	0	0.0	0.7	167.3
1989	0	0.00	0	93	0	93	0	0	0.0	0.7	133.8
1990	0	0.00	0	101	0	101	0	0	0.0	0.7	143.8
1991	0	0.00	0	96	0	96	0	0	0.0	0.7	135.3
1992	0	0.00	0	100	0	100	0	0	0.0	0.7	139.6
Gulf States 2/											
1988	0	0	0	106	0	106	0	106	0.0	6.2	17.0
1989	0	0	0	57	0	57	0	57	0.0	6.5	8.7
1990	0	0	0	21	0	21	0	21	0.0	6.8	3.1
1991	0	0	0	0	0	0	0	0	0.0	5.8	0.0
1992	0	0	0	0	0	0	0	0	0.0	6.5	0.0
Iran											
1988	48	1.15	55	888	0	943	35	900	5.8	53.1	17.8
1989	45	0.89	40	949	0	989	35	950	4.0	55.0	18.0
1990	48	1.04	50	782	0	832	35	800	6.0	57.0	14.6
1991	47	1.17	55	899	0	954	35	900	5.8	59.1	16.2
1992	45	1.22	55	900	0	955	35	900	5.8	61.2	15.6
Iraq											
1988	0	0.00	75	511	0	586	0	525	12.8	17.1	34.2
1989	45	2.33	105	612	0	717	0	650	14.6	17.7	40.4
1990	50	2.20	110	0	0	110	0	100	100.0	18.4	6.0
1991	30	1.83	55	0	0	55	0	50	100.0	17.9	3.1
1992	50	2.00	100	0	0	100	0	75	100.0	18.5	5.4
Israel											
1988	8	2.75	22	420	0	456	24	415	4.8	4.1	111.5
1989	8	2.75	22	293	0	315	24	315	7.0	4.1	75.9
1990	0	0.00	0	324	0	326	22	326	0.0	4.3	75.8
1991	0	0.00	0	430	0	420	32	420	0.0	4.5	92.5
1992	0	0.00	0	500	0	505	27	505	0.0	4.7	106.4
Jordan											
1988	1	1.00	1	141	0	142	0	125	0.7	3.0	47.2
1989	1	1.00	1	223	0	224	0	200	0.4	3.1	71.4
1990	1	1.00	1	172	0	173	0	150	0.6	3.3	52.9
1991	1	1.00	1	450	0	451	0	400	0.2	3.4	132.2
1992	1	1.00	1	300	0	301	0	264	0.3	3.6	84.6
Lebanon											
1988	2	1.00	2	137	0	117	37	117	1.7	3.3	35.8
1989	2	1.00	2	95	0	119	15	119	1.7	3.3	36.0
1990	2	1.00	2	159	0	161	15	161	1.2	3.3	48.2
1991	2	1.00	2	94	0	96	15	96	2.1	3.4	28.3
1992	2	1.00	2	100	0	102	15	102	2.0	3.4	29.7
Saudi Arabia											
1988	2	1.00	2	660	0	672	30	672	0.3	15.3	43.8
1989	2	1.00	2	803	0	815	20	815	0.2	16.0	51.0
1990	2	1.50	3	799	0	812	10	812	0.4	16.3	49.9
1991	3	1.33	4	898	0	902	10	902	0.4	16.5	54.7
1992	3	1.33	4	900	0	904	10	904	0.4	17.1	53.0

Appendix table 15--Supply and use of corn in North Africa and the Middle East, 1988-92--Continued

Country and year	Area harvested	Yield	Production	Imports	Exports	Consumption	Ending Stocks	Feed	Self- suffi- ciency ratio 1/	Population	Per capita consump- tion
	1,000 ha	tons/ha	-----1,000 tons-----						percent	millions	kilograms
Syria											
1988	49	1.84	90	71	0	171	10	170	52.6	11.8	14.5
1989	56	1.95	109	220	0	319	20	300	34.2	12.2	26.0
1990	65	2.00	130	245	0	345	50	320	37.7	12.7	27.1
1991	60	3.75	225	163	0	398	40	398	56.5	13.2	30.1
1992	69	4.20	290	100	0	390	40	390	74.4	13.7	28.4
Turkey											
1988	580	3.79	2,200	325	0	2,525	200	1,900	87.1	54.6	46.2
1989	600	3.17	1,900	798	13	2,685	200	2,100	70.8	55.9	48.0
1990	610	3.44	2,100	115	8	2,357	50	1,900	89.1	57.1	41.3
1991	620	3.55	2,200	85	10	2,275	50	1,800	96.7	58.4	39.0
1992	625	3.52	2,200	100	10	2,200	140	1,800	100.0	59.6	36.9
Yemen											
1988	40	1.38	55	7	0	62	0	0	88.7	9.2	6.8
1989	40	1.13	45	143	0	188	0	0	23.9	9.4	19.9
1990	40	1.25	50	102	0	152	0	0	32.9	9.7	15.6
1991	40	1.25	50	131	0	181	0	0	27.6	10.1	18.0
1992	40	1.25	50	150	0	200	0	0	25.0	10.4	19.2
North Africa											
1988	1,223	3.80	4,647	2,955	0	7,602	30	7,000	61.1	111.7	68.1
1989	1,251	3.94	4,930	3,362	0	8,192	130	7,621	60.2	114.4	71.6
1990	1,218	4.14	5,037	3,751	0	8,788	130	8,157	57.3	117.1	75.0
1991	1,080	4.42	4,769	2,823	0	7,592	130	6,780	62.8	119.9	63.3
1992	1,206	3.91	4,719	3,075	0	7,794	130	7,048	60.5	122.7	63.5
Algeria											
1988	1	1.00	1	1,200	0	1,201	0	1,200	0.1	24.1	49.8
1989	1	2.00	2	1,461	0	1,363	100	1,362	0.1	24.7	55.1
1990	1	2.00	2	1,300	0	1,302	100	1,301	0.2	25.4	51.3
1991	1	2.00	2	950	0	952	100	952	0.2	26.0	36.6
1992	1	2.00	2	1,100	0	1,102	100	1,102	0.2	26.7	41.3
Egypt											
1988	825	5.20	4,287	1,255	0	5,542	0	5,100	77.4	51.3	108.0
1989	843	5.37	4,524	1,254	0	5,778	0	5,374	78.3	52.5	110.0
1990	840	5.47	4,598	1,943	0	6,541	0	6,098	70.3	53.8	121.6
1991	693	6.39	4,431	1,340	0	5,771	0	5,050	76.8	55.1	104.8
1992	750	6.00	4,500	1,300	0	5,800	0	5,220	77.6	56.4	102.9
Libya											
1988	0	0.00	0	190	0	190	0	190	0.0	4.0	47.9
1989	0	0.00	0	281	0	281	0	281	0.0	4.1	68.6
1990	0	0.00	0	58	0	58	0	58	0.0	4.2	13.7
1991	0	0.00	0	68	0	68	0	68	0.0	4.4	15.6
1992	0	0.00	0	75	0	75	0	75	0.0	4.5	16.7
Morocco											
1988	396	0.90	358	110	0	468	20	310	76.5	24.5	19.1
1989	406	0.99	403	91	0	494	20	330	81.6	25.1	19.7
1990	376	1.16	436	175	0	611	20	425	71.4	25.6	23.9
1991	385	0.87	335	200	0	535	20	445	62.6	26.2	20.5
1992	454	0.48	216	350	0	566	20	400	38.2	26.7	21.2
Tunisia											
1988	1	1.00	1	200	0	201	10	200	0.5	7.8	25.9
1989	1	1.00	1	275	0	276	10	274	0.4	7.9	34.8
1990	1	1.00	1	275	0	276	10	275	0.4	8.1	34.1
1991	1	1.00	1	265	0	266	10	265	0.4	8.3	32.1
1992	1	1.00	1	250	0	251	10	251	0.4	8.4	29.7

1/ Production/consumption. A self-sufficiency ratio greater than 100 is due to stock changes. 2/ Bahrain, Kuwait, Oman, Qatar, United Arab Emirates.

Source: USDA Foreign Agricultural Service, Production, Supply and Utilization database, April 1993.



Appendix table 16--Supply and use of barley in North Africa and the Middle East, 1988-92

Country and year	Area harvested	Yield	Production	Imports	Exports	Consumption	Ending Stocks	Feed	Self- suffi- ciency ratio 1/	Population	Per capita consump- tion
	1,000 ha	tons/ha	-----1,000 tons-----						percent	millions	kilograms
Middle East											
1988	9,177	2.72	14,837	6,031	571	18,228	6,774	15,104	81.4	178.4	102.2
1989	7,945	2.17	9,252	6,521	34	17,633	4,880	14,766	52.5	184.1	95.8
1990	9,080	2.51	13,127	6,314	44	18,885	5,392	14,781	69.5	189.7	99.5
1991	9,643	1.28	12,365	7,451	1,390	18,549	5,269	15,690	66.7	192.9	96.1
1992	9,850	1.29	12,748	7,300	600	19,541	5,176	15,976	65.2	199.4	98.0
Cyprus											
1988	55	2.31	127	247	0	374	0	374	34.0	0.7	544.0
1989	55	2.36	130	325	0	455	0	455	28.6	0.7	654.8
1990	65	1.62	105	259	0	364	0	364	28.8	0.7	518.4
1991	50	1.08	54	273	0	327	0	327	16.5	0.7	460.9
1992	55	1.91	105	300	0	405	0	405	25.9	0.7	565.3
Gulf States 2/											
1988	0	0	0	332	0	332	0	178	0.0	6.2	53.4
1989	0	0	0	234	0	234	0	152	0.0	6.5	35.9
1990	0	0	0	178	0	178	0	40	0.0	6.8	26.1
1991	0	0	0	192	0	192	0	59	0.0	5.8	33.3
1992	0	0	0	200	0	200	0	50	0.0	6.5	30.7
Iran											
1988	2,400	1.41	3,395	450	0	3,200	945	1,950	106.1	53.1	60.3
1989	2,650	1.08	2,850	400	0	3,545	650	2,200	80.4	55.0	64.4
1990	2,500	1.40	3,500	420	0	3,870	700	2,550	90.4	57.0	67.9
1991	2,500	1.32	3,300	0	0	3,100	900	2,400	106.5	59.1	52.5
1992	2,600	1.42	3,700	0	0	3,700	900	2,400	100.0	61.2	60.5
Iraq											
1988	1,314	1.09	1,437	100	75	1,300	243	1,100	110.5	17.1	76.0
1989	913	0.73	663	615	25	1,350	146	1,150	49.1	17.7	76.1
1990	1,900	1.00	1,900	100	0	2,100	46	1,000	90.5	18.4	114.0
1991	1,300	0.62	800	0	0	846	0	500	94.6	17.9	47.2
1992	1,300	1.00	1,300	0	0	1,300	0	700	100.0	18.5	70.4
Israel											
1988	15	0.67	10	317	0	330	33	329	3.0	4.1	80.7
1989	14	0.29	4	240	0	265	12	239	1.5	4.1	63.9
1990	15	0.53	8	375	0	363	32	360	2.2	4.3	84.4
1991	14	0.43	6	349	0	349	38	340	1.7	4.5	76.9
1992	14	0.50	7	450	0	460	35	450	1.5	4.7	96.9
Jordan											
1988	65	0.82	53	200	0	213	62	213	24.9	3.0	70.7
1989	44	0.66	29	200	0	231	60	231	12.6	3.1	73.6
1990	34	1.06	36	150	0	196	50	196	18.4	3.3	59.9
1991	23	1.17	27	350	0	377	50	377	7.2	3.4	110.5
1992	88	0.74	65	350	0	415	50	415	15.7	3.6	116.7
Lebanon											
1988	4	1.25	5	5	0	10	11	10	50.0	3.3	3.1
1989	4	1.25	5	34	0	39	11	39	12.8	3.3	11.8
1990	5	1.20	6	71	0	71	17	71	8.5	3.3	21.2
1991	5	1.20	6	75	0	87	11	62	6.9	3.4	25.7
1992	5	1.20	6	100	0	106	11	106	5.7	3.4	30.8
Saudi Arabia											
1988	80	2.50	200	4,300	0	4,500	3,540	4,350	4.4	15.3	293.5
1989	65	4.62	300	4,000	0	4,050	3,790	4,000	7.4	16.0	253.5
1990	57	6.35	362	4,500	0	4,937	3,715	4,500	7.3	16.3	303.4
1991	66	6.06	400	6,200	0	6,500	3,815	5,800	6.2	16.5	393.8
1992	65	6.31	410	5,800	0	6,100	3,925	5,600	6.7	17.1	357.8

Continued--

Appendix table 16--Supply and use of barley in North Africa and the Middle East, 1988-92--Continued

Country and year	Area harvested	Yield	Production	Imports	Exports	Consumption	Ending Stocks	Feed	Self- suffi- ciency ratio 1/	Population	Per capita consump- tion
	1,000 ha	tons/ha	-----1,000 tons-----						percent	millions	kilograms
Syria											
1988	1,844	1.36	2,500	0	96	1,479	940	1,100	169.0	11.8	125.4
1989	750	0.36	271	0	0	1,200	11	1,050	22.6	12.2	98.0
1990	1,000	0.50	500	170	0	660	21	600	75.8	12.7	51.9
1991	2,233	0.41	917	0	0	816	122	725	112.4	13.2	61.7
1992	2,271	0.40	900	0	0	900	122	750	100.0	13.7	65.5
Turkey											
1988	3,300	2.12	7,000	80	400	6,380	1,000	5,500	109.7	54.6	116.8
1989	3,350	1.46	4,900	473	9	6,164	200	5,250	79.5	55.9	110.3
1990	3,400	1.94	6,600	91	44	6,036	811	5,100	109.3	57.1	105.7
1991	3,400	2.00	6,800	12	1,390	5,900	333	5,100	115.3	58.4	101.1
1992	3,400	1.82	6,200	100	600	5,900	133	5,100	105.1	59.6	98.9
Yemen											
1988	50	1.10	55	0	0	55	0	0	100.0	9.2	6.0
1989	50	1.00	50	0	0	50	0	0	100.0	9.4	5.3
1990	52	1.06	55	0	0	55	0	0	100.0	9.7	5.6
1991	52	1.06	55	0	0	55	0	0	100.0	10.1	5.5
1992	52	1.06	55	0	0	55	0	0	100.0	10.4	5.3
North Africa											
1988	3,641	1.12	4,091	1,457	120	4,988	1,050	3,631	82.0	111.7	44.7
1989	4,196	1.01	4,234	1,408	0	5,802	890	4,275	73.0	114.4	50.7
1990	4,459	0.82	3,666	1,087	0	5,173	470	3,759	70.9	117.1	44.2
1991	4,644	1.29	5,974	491	0	6,162	773	4,245	96.9	119.9	51.4
1992	4,371	0.75	3,271	1,200	0	4,971	273	3,455	65.8	122.7	40.5
Algeria											
1988	674	0.58	390	700	0	1,110	30	1,150	35.1	24.1	46.0
1989	1,050	0.75	790	470	0	1,240	50	1,230	63.7	24.7	50.1
1990	1,200	0.67	800	145	0	965	30	950	82.9	25.4	38.0
1991	1,400	1.25	1,750	100	0	1,800	80	1,535	97.2	26.0	69.2
1992	1,300	1.05	1,370	300	0	1,700	50	1,600	80.6	26.7	63.7
Egypt											
1988	37	2.95	109	0	0	109	20	95	100.0	51.3	2.1
1989	55	3.09	170	0	0	190	0	115	89.5	52.5	3.6
1990	55	3.09	170	17	0	187	0	101	90.9	53.8	3.5
1991	55	3.09	170	0	0	170	0	0	100.0	55.1	3.1
1992	55	3.09	170	0	0	170	0	0	100.0	56.4	3.0
Libya											
1988	280	0.27	75	449	0	524	0	400	14.3	4.0	132.0
1989	280	0.27	75	738	0	813	0	700	9.2	4.1	198.5
1990	280	0.29	80	725	0	805	0	700	9.9	4.2	190.6
1991	280	0.29	80	166	0	246	0	210	32.5	4.4	56.5
1992	280	0.29	80	200	0	280	0	280	28.6	4.5	62.4
Morocco											
1988	2,499	1.38	3,454	0	120	2,839	940	1,600	121.7	24.5	115.7
1989	2,399	1.25	2,999	0	0	3,159	780	1,850	94.9	25.1	126.0
1990	2,415	0.89	2,138	200	0	2,718	400	1,550	78.7	25.6	106.1
1991	2,357	1.38	3,253	200	0	3,300	553	1,900	98.6	26.2	126.2
1992	2,233	0.48	1,081	500	0	2,021	113	1,000	53.5	26.7	75.7
Tunisia											
1988	151	0.42	63	308	0	406	60	386	15.5	7.8	52.3
1989	412	0.49	200	200	0	400	60	380	50.0	7.9	50.4
1990	509	0.94	478	0	0	498	40	458	96.0	8.1	61.4
1991	552	1.31	721	25	0	646	140	600	111.6	8.3	78.1
1992	503	1.13	570	200	0	800	110	575	71.3	8.4	94.7

1/ Production/consumption. A self-sufficiency ratio greater than 100 is due to stock changes.

2/ Bahrain, Kuwait, Oman, Qatar, United Arab Emirates.

Source: USDA Foreign Agricultural Service, Production, Supply and Utilization database, April 1993.



Appendix table 17--Supply and use of rice in North Africa and the Middle East, 1988-92

Country and year	Area harvested	Yield	Production	Imports	Exports	Consumption	Ending Stock	Feed	Self-sufficiency ratio 1/	Population	Per capita consumption
	1,000 ha	tons/ha	-----1,000 tons-----						percent	million	kilograms
Middle East											
1988	589	2.05	1,206	3,260	78	4,360	453	0	27.7	178.4	24.4
1989	668	2.29	1,530	2,990	15	4,497	461	0	34.0	184.1	24.4
1990	650	2.50	1,626	2,331	18	4,239	161	0	38.4	189.7	22.3
1991	665	2.41	1,600	3,222	32	4,557	394	0	35.1	192.9	23.6
1992	760	2.24	1,700	3,206	15	4,717	568	0	36.0	199.4	23.7
Cyprus											
1988	0	0.00	0	5	0	5	0	0	0.0	0.7	7.3
1989	0	0.00	0	7	0	7	0	0	0.0	0.7	10.1
1990	0	0.00	0	6	0	6	0	0	0.0	0.7	8.5
1991	0	0.00	0	5	0	5	0	0	0.0	0.7	7.0
1992	0	0.00	0	6	0	6	0	0	0.0	0.7	8.4
Gulf States 2/											
1988	0	0	0	512	15	487	30	0	0.0	6.2	78.3
1989	0	0	0	550	15	545	20	0	0.0	6.5	83.6
1990	0	0	0	369	15	354	20	0	0.0	6.8	51.9
1991	0	0	0	432	15	417	20	0	0.0	5.8	72.3
1992	0	0	0	430	10	420	20	0	0.0	6.5	64.4
Iran											
1988	467	2.02	945	1,000	0	1,895	150	0	49.9	53.1	35.7
1989	519	2.36	1,223	850	0	2,023	200	0	60.5	55.0	36.8
1990	490	2.65	1,300	565	0	2,015	50	0	64.5	57.0	35.3
1991	575	2.52	1,450	950	0	2,250	200	0	64.4	59.1	38.1
1992	650	2.31	1,500	950	0	2,300	350	0	65.2	61.2	37.6
Iraq											
1988	51	1.84	94	542	0	630	171	0	14.9	17.1	36.8
1989	73	2.12	155	360	0	585	101	0	26.5	17.7	33.0
1990	85	1.95	166	250	0	517	0	0	32.1	18.4	28.1
1991	40	1.25	50	500	0	525	25	0	9.5	17.9	29.3
1992	40	1.25	50	500	0	525	50	0	9.5	18.5	28.4
Israel											
1988	0	0.00	0	65	0	65	12	0	0.0	4.1	15.9
1989	0	0.00	0	60	0	65	7	0	0.0	4.1	15.7
1990	0	0.00	0	60	0	65	2	0	0.0	4.3	15.1
1991	0	0.00	0	70	0	70	2	0	0.0	4.5	15.4
1992	0	0.00	0	70	0	70	2	0	0.0	4.7	14.7
Jordan											
1988	0	0.00	0	58	0	80	15	0	0.0	3.0	26.6
1989	0	0.00	0	106	0	85	36	0	0.0	3.1	27.1
1990	0	0.00	0	91	0	105	22	0	0.0	3.3	32.1
1991	0	0.00	0	100	0	95	27	0	0.0	3.4	27.8
1992	0	0.00	0	100	0	117	10	0	0.0	3.6	32.9
Lebanon											
1988	0	0.00	0	108	0	108	2	0	0.0	3.3	33.0
1989	0	0.00	0	52	0	52	2	0	0.0	3.3	15.7
1990	0	0.00	0	34	0	34	2	0	0.0	3.3	10.2
1991	0	0.00	0	35	0	35	2	0	0.0	3.4	10.3
1992	0	0.00	0	35	0	35	2	0	0.0	3.4	10.2
Saudi Arabia											
1988	1	2.00	2	525	0	518	9	0	0.4	15.3	33.8
1989	1	2.00	2	525	0	525	11	0	0.4	16.0	32.9
1990	0	0.00	0	525	0	530	6	0	0.0	16.3	32.6
1991	0	0.00	0	625	15	550	66	0	0.0	16.5	33.3
1992	0	0.00	0	525	0	540	51	0	0.0	17.1	31.7

Continued--

Appendix table 17--Supply and use of rice in North Africa and the Middle East, 1988-92--Continued

Country and year	Area harvested	Yield	Production	Imports	Exports	Consumption	Ending Stock	Feed	Self-sufficiency ratio 1/	Population	Per capita consumption
	1,000 ha	tons/ha	-----1,000 tons-----						percent	million	kilograms
Syria											
1988	0	0.00	0	120	0	130	10	0	0.0	11.8	11.0
1989	0	0.00	0	140	0	135	15	0	0.0	12.2	11.0
1990	0	0.00	0	135	0	135	15	0	0.0	12.7	10.6
1991	0	0.00	0	140	0	140	15	0	0.0	13.2	10.6
1992	0	0.00	0	140	0	140	15	0	0.0	13.7	10.2
Turkey											
1988	70	2.36	165	200	63	307	35	0	53.7	54.6	5.6
1989	75	2.00	150	210	0	335	60	0	44.8	55.9	6.0
1990	75	2.13	160	161	3	338	40	0	47.3	57.1	5.9
1991	50	2.00	100	245	2	350	33	0	28.6	58.4	6.0
1992	70	2.14	150	250	5	360	68	0	41.7	59.6	6.0
Yemen											
1988	0	0.00	0	125	0	135	19	0	0.0	9.2	14.7
1989	0	0.00	0	130	0	140	9	0	0.0	9.4	14.8
1990	0	0.00	0	135	0	140	4	0	0.0	9.7	14.4
1991	0	0.00	0	120	0	120	4	0	0.0	10.1	11.9
1992	0	0.00	0	200	0	204	0	0	0.0	10.4	19.6
North Africa											
1988	361	4.01	1,449	134	108	1,483	12	0	97.7	111.7	13.3
1989	354	4.04	1,431	153	32	1,553	11	0	92.1	114.4	13.6
1990	437	4.86	2,126	153	85	2,036	169	0	104.4	117.1	17.4
1991	469	4.97	2,332	205	160	2,335	211	0	99.9	119.9	19.5
1992	519	5.07	2,631	205	209	2,627	211	0	100.2	122.7	21.4
Algeria											
1988	1	1.00	1	49	0	55	5	0	1.8	24.1	2.3
1989	1	1.00	1	39	0	40	5	0	2.5	24.7	1.6
1990	1	1.00	1	40	0	41	5	0	2.4	25.4	1.6
1991	1	1.00	1	40	0	41	5	0	2.4	26.0	1.6
1992	1	1.00	1	40	0	41	5	0	2.4	26.7	1.5
Egypt											
1988	352	4.05	1,427	10	108	1,329	0	0	107.4	51.3	25.9
1989	352	4.05	1,427	10	32	1,405	0	0	101.6	52.5	26.7
1990	435	4.88	2,122	3	85	1,890	150	0	112.3	53.8	35.1
1991	462	5.01	2,313	0	160	2,103	200	0	110.0	55.1	38.2
1992	510	5.10	2,600	0	209	2,391	200	0	108.7	56.4	42.4
Libya											
1988	0	0.00	0	75	0	75	0	0	0.0	4.0	18.9
1989	0	0.00	0	79	0	79	0	0	0.0	4.1	19.3
1990	0	0.00	0	73	0	73	0	0	0.0	4.2	17.3
1991	0	0.00	0	160	0	160	0	0	0.0	4.4	36.8
1992	0	0.00	0	160	0	160	0	0	0.0	4.5	35.7
Morocco											
1988	8	2.63	21	0	0	24	7	0	87.5	24.5	1.0
1989	1	3.00	3	25	0	29	6	0	10.3	25.1	1.2
1990	1	3.00	3	37	0	32	14	0	9.4	25.6	1.2
1991	6	3.00	18	5	0	31	6	0	58.1	26.2	1.2
1992	8	3.75	30	5	0	35	6	0	85.7	26.7	1.3
Tunisia											
1988	0	0.00	0	0	0	0	0	0	0.0	7.8	0.0
1989	0	0.00	0	0	0	0	0	0	0.0	7.9	0.0
1990	0	0.00	0	0	0	0	0	0	0.0	8.1	0.0
1991	0	0.00	0	0	0	0	0	0	0.0	8.3	0.0
1992	0	0.00	0	0	0	0	0	0	0.0	8.4	0.0

1/ Production/consumption. A self-sufficiency ratio greater than 100 is due to stock changes.

2/ Bahrain, Kuwait, Oman, Qatar, United Arab Emirates.

Sources: USDA Foreign Agricultural Service, Production, Supply and Utilization database, April 1993;



Appendix table 18--Supply and use of coarse grains in North Africa and the Middle East, 1988-92

Country and year	Area harvest	Yield	Production	Imports	Exports	Consumption	Ending Stocks	Feed	Self- suffi- ciency ratio 1/	Population	Per capita consump- tion
	1,000 ha	tons/ha	-----1,000 tons-----						percent	million	kilograms
Middle East											
1988	11,835	4.28	19,665	10,047	571	27,027	7,241	21,066	72.8	178.4	151.5
1989	10,695	3.82	13,697	11,558	47	27,179	5,270	21,420	50.4	184.1	147.6
1990	11,812	4.21	17,781	9,435	52	26,790	5,644	20,067	66.4	189.7	141.2
1991	11,655	1.41	16,434	10,972	1,400	26,119	5,531	21,422	62.9	192.9	135.4
1992	11,892	1.42	16,920	10,495	610	26,813	5,523	21,456	63.1	199.4	134.4
Cyprus											
1988	55	2.31	127	362	0	489	0	374	26.0	0.7	711.3
1989	55	2.36	130	418	0	548	0	455	23.7	0.7	788.6
1990	65	1.62	105	360	0	465	0	364	22.6	0.7	662.2
1991	50	1.08	54	369	0	423	0	327	12.8	0.7	596.2
1992	55	1.91	105	400	0	505	0	405	20.8	0.7	704.8
Gulf States 2/											
1988	0	0	0	438	0	438	0	284	0.0	6.2	70.4
1989	0	0	0	291	0	291	0	209	0.0	6.5	44.6
1990	0	0	0	199	0	199	0	61	0.0	6.8	29.2
1991	0	0	0	192	0	192	0	59	0.0	5.8	33.3
1992	0	0	0	200	0	200	0	50	0.0	6.5	30.7
Iran											
1988	2,456	1.41	3,468	1,388	0	4,211	980	2,875	82.4	53.1	79.3
1989	2,703	1.08	2,908	1,349	0	4,552	685	3,168	63.9	55.0	82.7
1990	2,558	1.40	3,570	1,202	0	4,722	735	3,360	75.6	57.0	82.8
1991	2,557	1.32	3,375	899	0	4,074	935	3,310	82.8	59.1	69.0
1992	2,655	1.42	3,770	900	0	4,670	935	3,315	80.7	61.2	76.3
Iraq											
1988	1,325	1.15	1,523	611	75	1,897	243	1,631	80.3	17.1	110.8
1989	969	0.80	779	1,227	25	2,078	146	1,806	37.5	17.7	117.1
1990	1,961	1.03	2,021	100	0	2,221	46	1,106	91.0	18.4	120.5
1991	1,341	0.65	866	0	0	912	0	556	95.0	17.9	50.9
1992	1,359	1.04	1,409	0	0	1,409	0	780	100.0	18.5	76.3
Israel											
1988	24	1.38	33	1,179	0	1,172	136	1,130	2.8	4.1	286.6
1989	27	1.15	31	891	0	979	79	953	3.2	4.1	236.0
1990	15	0.53	8	868	0	879	76	876	0.9	4.3	204.3
1991	14	0.43	6	954	0	934	102	925	0.6	4.5	205.8
1992	14	0.50	7	995	0	1,010	94	1,000	0.7	4.7	212.7
Jordan											
1988	66	0.82	54	477	0	491	62	474	11.0	3.0	163.1
1989	45	0.67	30	673	0	705	60	681	4.3	3.1	224.6
1990	35	1.06	37	342	0	389	50	366	9.5	3.3	118.8
1991	24	1.17	28	900	0	928	50	877	3.0	3.4	271.9
1992	89	0.74	66	650	0	716	50	679	9.2	3.6	201.3
Lebanon											
1988	6	1.17	7	142	0	127	48	127	5.5	3.3	38.8
1989	6	1.17	7	129	0	158	26	158	4.4	3.3	47.8
1990	7	1.14	8	230	0	232	32	232	3.4	3.3	69.4
1991	7	1.14	8	169	0	183	26	158	4.4	3.4	54.0
1992	7	1.14	8	200	0	208	26	208	3.8	3.4	60.5
Saudi Arabia											
1988	127	2.02	256	4,960	0	5,226	3,595	5,076	4.9	15.3	340.8
1989	137	2.75	377	4,803	0	4,940	3,835	4,890	7.6	16.0	309.2
1990	129	3.45	445	5,309	0	5,839	3,750	5,402	7.6	16.3	358.9
1991	139	3.48	484	7,098	0	7,482	3,850	6,782	6.5	16.5	453.3
1992	138	3.58	494	6,700	0	7,084	3,960	6,584	7.0	17.1	415.5

Continued--

Appendix table 18--Supply and use of coarse grains in North Africa and the Middle East, 1988-92--Continued

Country and year	Area harvest	Yield	Production	Imports	Exports	Consumption	Ending Stocks	Feed	Self-sufficiency ratio 1/	Population 1/	Per capita consumption
	1,000 ha	tons/ha	-----	1,000	tons	-----			percent	million	kilograms
<b>Syria</b>											
1988	1,928	1.36	2,622	71	96	1,682	950	1,270	155.9	11.8	142.6
1989	841	0.49	410	220	0	1,549	31	1,350	26.5	12.2	126.5
1990	1,100	0.60	660	415	0	1,035	71	920	63.8	12.7	81.3
1991	2,328	0.50	1,172	163	0	1,244	162	1,123	94.2	13.2	94.1
1992	2,375	0.51	1,220	100	0	1,320	162	1,140	92.4	13.7	96.1
<b>Turkey</b>											
1988	4,358	2.29	9,985	405	400	9,690	1,227	7,825	103.0	54.6	177.4
1989	4,422	1.70	7,515	1,271	22	9,583	408	7,750	78.4	55.9	171.5
1990	4,448	2.10	9,335	206	52	9,013	884	7,380	103.6	57.1	157.8
1991	4,448	2.17	9,645	97	1,400	8,820	406	7,305	109.4	58.4	151.1
1992	4,453	2.03	9,045	200	610	8,745	296	7,295	103.4	59.6	146.6
<b>Yemen</b>											
1988	745	2.58	795	7	0	802	0	0	99.1	9.2	87.6
1989	745	2.52	755	143	0	898	0	0	84.1	9.4	95.1
1990	747	2.67	796	102	0	898	0	0	88.6	9.7	92.1
1991	747	1.07	796	131	0	927	0	0	85.9	10.1	92.1
1992	747	1.07	796	150	0	946	0	0	84.1	10.4	91.0
<b>North Africa</b>											
1988	5,178	1.82	9,411	4,448	120	13,299	1,184	11,340	70.8	111.7	119.1
1989	5,750	1.72	9,872	4,770	0	14,702	1,124	12,604	67.1	114.4	128.5
1990	5,958	1.58	9,418	4,938	0	14,776	704	12,731	63.7	117.1	126.2
1991	6,078	1.91	11,581	3,314	0	14,592	1,007	11,863	79.4	119.9	121.7
1992	5,893	1.48	8,744	4,275	0	13,519	507	11,257	64.7	122.7	110.2
<b>Algeria</b>											
1988	783	0.54	421	1,910	0	2,351	30	2,390	17.9	24.1	97.5
1989	1,151	0.73	842	1,931	0	2,653	150	2,642	31.7	24.7	107.2
1990	1,281	0.66	843	1,445	0	2,308	130	2,292	36.5	25.4	91.0
1991	1,536	1.22	1,879	1,050	0	2,879	180	2,614	65.3	26.0	110.7
1992	1,411	1.04	1,467	1,400	0	2,897	150	2,797	50.6	26.7	108.6
<b>Egypt</b>											
1988	991	5.02	4,974	1,255	0	6,229	120	5,773	79.9	51.3	121.4
1989	1,027	5.14	5,280	1,254	0	6,554	100	6,075	80.6	52.5	124.7
1990	1,025	5.25	5,379	2,060	0	7,439	100	6,910	72.3	53.8	138.2
1991	880	5.93	5,221	1,340	0	6,561	100	5,670	79.6	55.1	119.1
1992	935	5.65	5,285	1,300	0	6,585	100	5,835	80.3	56.4	116.8
<b>Libya</b>											
1988	280	0.27	75	639	0	714	0	590	10.5	4.0	179.8
1989	280	0.27	75	1,019	0	1,094	0	981	6.9	4.1	267.1
1990	280	0.29	80	783	0	863	0	758	9.3	4.2	204.3
1991	280	0.29	80	234	0	314	0	278	25.5	4.4	72.1
1992	280	0.29	80	275	0	355	0	355	22.5	4.5	79.2
<b>Morocco</b>											
1988	2,972	1.30	3,877	136	120	3,398	964	2,001	114.1	24.5	138.4
1989	2,879	1.21	3,474	91	0	3,725	804	2,252	93.3	25.1	148.6
1990	2,862	0.92	2,637	375	0	3,392	424	2,038	77.7	25.6	132.4
1991	2,829	1.30	3,679	400	0	3,926	577	2,436	93.7	26.2	150.1
1992	2,763	0.49	1,341	850	0	2,631	137	1,444	51.0	26.7	98.5
<b>Tunisia</b>											
1988	152	0.42	64	508	0	607	70	586	10.5	7.8	78.2
1989	413	0.49	201	475	0	676	70	654	29.7	7.9	85.2
1990	510	0.94	479	275	0	774	50	733	61.9	8.1	95.5
1991	553	1.31	722	290	0	912	150	865	79.2	8.3	110.2
1992	504	1.13	571	450	0	1,051	120	826	54.3	8.4	124.4

1/ Production/consumption. A self-sufficiency ratio greater than 100 is due to stock changes.

2/ Bahrain, Kuwait, Oman, Qatar, United Arab Emirates.

Source: USDA Foreign Agricultural Service, Production, Supply and Utilization database, April 1993.



Appendix table 19--Supply and use of total grains in North Africa and the Middle East, 1988-92

Country and year	Area harvested	Yield	Production	Imports	Exports	Consumption	Ending Stocks	Feed	Self-sufficiency ratio 1/	Population	Per capita consumption
	1,000 ha	tons/ha	-----1,000 tons-----						percent	million	kilograms
Middle East											
1988	30,582	4.27	51,004	25,055	4,970	68,576	16,446	22,673	74.4	178.4	384.4
1989	28,715	3.89	38,904	32,472	1,870	69,810	16,142	22,927	55.7	184.1	379.2
1990	31,084	4.28	50,365	23,702	2,325	69,615	18,269	21,452	72.3	189.7	366.9
1991	31,814	1.61	51,305	24,354	9,845	69,142	14,937	22,987	74.2	192.9	358.3
1992	32,790	1.62	53,262	21,811	5,375	69,497	15,138	22,421	76.6	199.4	348.4
Cyprus											
1988	69	2.25	155	419	0	574	0	374	27.0	0.7	834.9
1989	68	2.06	140	474	0	614	0	455	22.8	0.7	883.6
1990	70	1.57	110	439	0	549	0	364	20.0	0.7	781.8
1991	57	1.07	61	491	0	552	0	327	11.1	0.7	778.1
1992	61	1.84	112	491	0	603	0	405	18.6	0.7	841.6
Gulf States 2/											
1988	0	0	0	1487	15	1462	30	284	0.0	6.2	235.1
1989	0	0	0	1565	15	1560	20	209	0.0	6.5	239.3
1990	0	0	0	1231	15	1216	20	61	0.0	6.8	178.3
1991	0	0	0	1111	15	1096	20	59	0.0	5.8	190.2
1992	0	0	0	1245	10	1235	20	50	0.0	6.5	189.3
Iran											
1988	9,073	1.29	11,678	5,588	0	16,471	4,245	3,375	70.9	53.1	310.4
1989	9,482	1.07	10,141	7,399	0	18,210	3,575	3,668	55.7	55.0	331.0
1990	9,548	1.35	12,870	5,767	0	17,937	4,275	3,860	71.8	57.0	314.7
1991	9,782	1.40	13,725	4,349	0	17,589	4,760	3,810	78.0	59.1	297.9
1992	10,505	1.47	15,470	3,850	0	18,770	5,310	3,315	82.4	61.2	306.8
Iraq											
1988	2,417	1.05	2,546	4,153	75	6,527	1,428	2,031	39.0	17.1	381.3
1989	1,629	0.87	1,425	4,987	25	6,563	1,252	2,006	21.7	17.7	370.0
1990	3,246	1.04	3,387	474	0	5,042	71	1,156	67.2	18.4	273.6
1991	3,181	0.76	2,416	2,205	0	4,342	350	556	55.6	17.9	242.3
1992	3,149	0.91	2,859	1,000	0	4,134	75	780	69.2	18.5	223.9
Israel											
1988	117	2.09	244	1,844	0	2,150	239	1,210	11.3	4.1	525.8
1989	117	1.98	232	1,601	0	1,882	190	1,083	12.3	4.1	453.6
1990	105	2.55	268	1,692	0	1,768	382	1,096	15.2	4.3	410.9
1991	104	1.88	196	1,846	0	2,070	354	1,275	9.5	4.5	456.1
1992	99	2.49	247	1,795	0	2,075	321	1,250	11.9	4.7	437.0
Jordan											
1988	190	1.14	216	991	20	1,162	239	474	18.6	3.0	386.0
1989	135	0.86	116	1,295	35	1,247	368	681	9.3	3.1	397.2
1990	104	1.21	126	1,294	50	1,424	314	366	8.8	3.3	435.1
1991	75	1.15	86	2,215	50	2,248	317	877	3.8	3.4	658.7
1992	179	0.82	146	1,500	50	1,683	230	679	8.7	3.6	473.1
Lebanon											
1988	16	1.31	21	383	0	382	50	142	5.5	3.3	116.8
1989	16	1.31	21	297	0	340	28	173	6.2	3.3	103.0
1990	17	1.65	28	418	0	440	34	247	6.4	3.3	131.7
1991	17	1.53	26	559	0	591	28	173	4.4	3.4	174.5
1992	17	1.53	26	585	0	611	28	223	4.3	3.4	177.7
Saudi Arabia											
1988	854	4.13	3,525	5,639	1,956	7,209	4,354	5,076	48.9	15.3	470.2
1989	846	4.33	3,664	5,488	1,583	6,997	4,926	4,890	52.4	16.0	437.9
1990	873	4.48	3,909	6,018	1,661	7,936	5,256	5,402	49.3	16.3	487.7
1991	879	4.94	4,345	8,048	2,440	9,677	5,532	6,782	44.9	16.5	586.3
1992	878	5.23	4,594	7,405	2,400	9,274	5,857	6,584	49.5	17.1	543.9

Continued--

Appendix table 19--Supply and use of total grains in North Africa and the Middle East, 1988-92--Continued

Country and year	Area harvested	Yield	Production	Imports	Exports	Consumption	Ending Stocks	Feed	Self-sufficiency ratio 1/	Population	Per capita consumption
	1,000 ha	tons/ha	-----1,000 tons-----						percent	millions	kilograms
Syria											
1988	3,028	1.55	4,689	995	96	4,436	1,461	1,520	105.7	11.8	376.2
1989	1,585	0.83	1,310	1,531	0	3,905	397	1,600	33.5	12.2	318.8
1990	2,200	1.08	2,386	2,095	0	4,040	838	1,120	59.1	12.7	317.5
1991	3,597	0.92	3,312	1,095	0	4,181	1,064	1,323	79.2	13.2	316.3
1992	3,755	1.07	4,020	740	0	4,560	1,264	1,340	88.2	13.7	332.1
Turkey											
1988	13,178	1.98	26,150	1,212	2,808	24,059	4,362	8,187	108.7	54.6	440.3
1989	13,197	1.53	20,165	5,243	212	24,190	5,368	8,162	83.4	55.9	432.9
1990	13,273	1.92	25,495	658	599	23,851	7,071	7,780	106.9	57.1	417.5
1991	13,298	1.97	26,245	502	7,340	23,970	2,508	7,805	109.5	58.4	410.6
1992	13,323	1.87	24,895	1,450	2,915	23,905	2,033	7,795	104.1	59.6	400.8
Yemen											
1988	820	2.59	890	1,172	0	2,072	19	0	43.0	9.2	226.3
1989	820	2.53	845	1,296	0	2,151	9	0	39.3	9.4	227.7
1990	824	2.65	893	1,808	0	2,706	4	0	33.0	9.7	277.6
1991	824	1.08	893	1,933	0	2,826	4	0	31.6	10.1	280.8
1992	824	1.08	893	1,750	0	2,647	0	0	33.7	10.4	254.6
North Africa											
1988	10,095	1.85	18,688	19,298	228	37,451	2,694	12,570	49.9	111.7	335.4
1989	11,681	1.72	20,128	19,122	32	39,238	2,674	13,634	51.3	114.4	343.0
1990	12,587	1.71	21,496	19,331	85	40,779	2,637	14,036	52.7	117.1	348.2
1991	12,892	2.10	27,040	16,740	160	42,152	4,105	13,163	64.1	119.9	351.6
1992	12,489	1.69	21,058	19,180	209	41,152	2,982	12,257	51.2	122.7	335.5
Algeria											
1988	1,807	0.57	1,037	6,159	0	7,348	108	2,440	14.1	24.1	304.8
1989	2,622	0.76	1,993	6,130	0	7,863	368	2,772	25.3	24.7	317.9
1990	2,832	0.57	1,619	6,085	0	7,554	518	2,397	21.4	25.4	297.7
1991	3,107	1.17	3,620	5,090	0	8,443	785	2,764	42.9	26.0	324.5
1992	3,112	1.04	3,238	5,340	0	8,638	725	2,947	37.5	26.7	323.9
Egypt											
1988	1,940	4.76	9,240	8,673	108	17,805	920	6,773	51.9	51.3	347.1
1989	2,009	4.92	9,890	8,522	32	18,400	900	6,875	53.8	52.5	350.1
1990	2,200	5.36	11,787	7,731	85	19,583	750	7,910	60.2	53.8	363.9
1991	2,102	5.72	12,016	7,121	160	18,927	800	6,670	63.5	55.1	343.6
1992	2,323	5.38	12,502	7,300	209	19,426	967	6,535	64.4	56.4	344.6
Libya											
1988	600	0.35	210	1,464	0	1,674	0	590	12.5	4.0	421.6
1989	570	0.39	220	1,846	0	2,066	0	981	10.6	4.1	504.4
1990	580	0.41	235	1,865	0	2,100	0	758	11.2	4.2	497.3
1991	580	0.45	260	1,779	0	2,039	0	278	12.8	4.4	468.4
1992	570	0.40	230	1,435	0	1,665	0	355	13.8	4.5	371.3
Morocco											
1988	5,297	1.49	7,917	1,514	120	8,687	1,358	2,181	91.1	24.5	353.9
1989	5,510	1.34	7,404	1,185	0	8,769	1,178	2,352	84.4	25.1	349.7
1990	5,583	1.12	6,254	2,353	0	9,049	736	2,238	69.1	25.6	353.3
1991	5,477	1.58	8,636	1,937	0	9,689	1,620	2,586	89.1	26.2	370.4
1992	4,999	0.59	2,933	4,055	0	8,288	320	1,594	35.4	26.7	310.3
Tunisia											
1988	451	0.63	284	1,488	0	1,937	308	586	14.7	7.8	249.6
1989	970	0.64	621	1,439	0	2,140	228	654	29.0	7.9	269.8
1990	1,392	1.15	1,601	1,297	0	2,493	633	733	64.2	8.1	307.6
1991	1,626	1.54	2,508	813	0	3,054	900	865	82.1	8.3	369.0
1992	1,485	1.45	2,155	1,050	0	3,135	970	826	68.7	8.4	371.2

1/ Production/consumption. A self-sufficiency ratio greater than 100 is due to stock changes.

2/ Bahrain, Kuwait, Oman, Qatar, United Arab Emirates.

Sources: USDA, Foreign Agricultural Service, Production, Supply and Utilization database, April 1993;  
USDA, Foreign Agricultural Service, World Grain Situation and Outlook, Circular Series  
FG 6-93, June 1993.



Appendix table 20--Supply and use of sunflower seed in North Africa and the Middle East, 1988-92

Country and year	Area harvest	Pro-duction Yield	Im-ports	Ex-ports	Consump-tion	Ending Stocks	Feed use	Food use	Amount crushed	Self-suffi-ciency ratio 1/	Popu-lation	Per capita consump-tion	
	1,000 ha	tons/ha	-----1,000 tons-----							percent	millions	kilograms	
Middle East													
1988	758	1.51	1,147	15	0	861	306	38	55	768	133.2	178.4	4.8
1989	852	1.47	1,252	13	2	1,400	169	34	53	1,313	89.4	184.1	7.6
1990	747	1.21	907	45	7	1,080	34	30	48	1,002	84.0	189.7	5.7
1991	609	1.17	714	38	9	742	35	31	59	652	96.2	192.9	3.8
1992	759	1.38	1,044	8	9	1,043	35	31	59	953	100.1	199.4	5.2
Cyprus													
1988	0	0.00	0	0	0	0	0	0	0	0	0.0	0.7	0.0
1989	0	0.00	0	0	0	0	0	0	0	0	0.0	0.7	0.0
1990	0	0.00	0	0	0	0	0	0	0	0	0.0	0.7	0.0
1991	0	0.00	0	0	0	0	0	0	0	0	0.0	0.7	0.0
1992	0	0.00	0	0	0	0	0	0	0	0	0.0	0.7	0.0
Gulf States 2/													
1988	0	0.00	0	0	0	0	0	0	0	0	0.0	6.2	0.0
1989	0	0.00	0	0	0	0	0	0	0	0	0.0	6.5	0.0
1990	0	0.00	0	0	0	0	0	0	0	0	0.0	6.8	0.0
1991	0	0.00	0	0	0	0	0	0	0	0	0.0	5.8	0.0
1992	0	0.00	0	0	0	0	0	0	0	0	0.0	6.5	0.0
Iran													
1988	19	0.74	14	0	0	14	0	1	13	0	100.0	53.1	0.3
1989	19	0.74	14	0	0	14	0	1	13	0	100.0	55.0	0.3
1990	19	0.74	14	0	0	14	0	1	13	0	100.0	57.0	0.2
1991	19	0.74	14	0	0	14	0	1	13	0	100.0	59.1	0.2
1992	19	0.74	14	0	0	14	0	1	13	0	100.0	61.2	0.2
Iraq													
1988	14	0.79	11	0	0	11	0	0	11	0	100.0	17.1	0.6
1989	14	0.79	11	0	0	11	0	0	11	0	100.0	17.7	0.6
1990	14	0.79	11	0	0	11	0	0	11	0	100.0	18.4	0.6
1991	14	0.79	11	0	0	11	0	0	11	0	100.0	17.9	0.6
1992	14	0.79	11	0	0	11	0	0	11	0	100.0	18.5	0.6
Israel													
1988	6	1.17	7	15	0	22	0	7	15	0	31.8	4.1	5.4
1989	9	1.89	17	10	2	25	0	0	15	10	68.0	4.1	6.0
1990	4	3.00	12	12	7	17	0	0	9	8	70.6	4.3	4.0
1991	16	1.81	29	8	9	28	0	0	20	8	103.6	4.5	6.2
1992	16	1.81	29	8	9	28	0	0	20	8	103.6	4.7	5.9
Jordan													
1988	0	0.00	0	0	0	0	0	0	0	0	0.0	3.0	0.0
1989	0	0.00	0	0	0	0	0	0	0	0	0.0	3.1	0.0
1990	0	0.00	0	0	0	0	0	0	0	0	0.0	3.3	0.0
1991	0	0.00	0	0	0	0	0	0	0	0	0.0	3.4	0.0
1992	0	0.00	0	0	0	0	0	0	0	0	0.0	3.6	0.0
Lebanon													
1988	0	0.00	0	0	0	0	0	0	0	0	0.0	3.3	0.0
1989	0	0.00	0	0	0	0	0	0	0	0	0.0	3.3	0.0
1990	0	0.00	0	0	0	0	0	0	0	0	0.0	3.3	0.0
1991	0	0.00	0	0	0	0	0	0	0	0	0.0	3.4	0.0
1992	0	0.00	0	0	0	0	0	0	0	0	0.0	3.4	0.0
Saudi Arabia													
1988	0	0.00	0	0	0	0	0	0	0	0	0.0	15.3	0.0
1989	0	0.00	0	0	0	0	0	0	0	0	0.0	16.0	0.0
1990	0	0.00	0	0	0	0	0	0	0	0	0.0	16.3	0.0
1991	0	0.00	0	0	0	0	0	0	0	0	0.0	16.5	0.0
1992	0	0.00	0	0	0	0	0	0	0	0	0.0	17.1	0.0

Continued--

Appendix table 20--Supply and use of sunflower seed in North Africa and the Middle East, 1988-92--Continued

Country and year	Area harvest	Yield	Pro-duction	Im-ports	Ex-port	Consump-tion	Ending Stocks	Feed use	Food use	Amount crushed	Self-suffi-ciency ratio 1/	Popu-lation	Per capita consump-tion
	1,000 ha	tons/ha	-----1,000 tons-----								percent	millions	kilograms
Syria													
1988	19	0.79	15	0	0	15	0	0	9	6	100.0	11.8	1.3
1989	10	1.00	10	0	0	10	0	0	7	3	100.0	12.2	0.8
1990	10	1.00	10	0	0	10	0	0	7	3	100.0	12.7	0.8
1991	10	1.00	10	0	0	10	0	0	7	3	100.0	13.2	0.8
1992	10	1.00	10	0	0	10	0	0	7	3	100.0	13.7	0.7
Turkey													
1988	700	1.57	1,100	0	0	799	306	30	7	762	137.7	54.6	14.6
1989	800	1.50	1,200	3	0	1,340	169	33	7	1,300	89.6	55.9	24.0
1990	700	1.23	860	33	0	1,028	34	29	8	991	83.7	57.1	18.0
1991	550	1.18	650	30	0	679	35	30	8	641	95.7	58.4	11.6
1992	700	1.40	980	0	0	980	35	30	8	942	100.0	59.6	16.4
Yemen													
1988	0	0.00	0	0	0	0	0	0	0	0	0.0	9.2	0.0
1989	0	0.00	0	0	0	0	0	0	0	0	0.0	9.4	0.0
1990	0	0.00	0	0	0	0	0	0	0	0	0.0	9.7	0.0
1991	0	0.00	0	0	0	0	0	0	0	0	0.0	10.1	0.0
1992	0	0.00	0	0	0	0	0	0	0	0	0.0	10.4	0.0
North Africa													
1988	98	1.08	106	1	0	100	12	1	19	80	106.0	111.7	0.9
1989	121	1.04	126	1	0	129	10	1	23	105	97.7	114.4	1.1
1990	174	1.16	201	16	0	217	10	1	23	193	92.6	117.1	1.9
1991	161	1.05	169	41	0	210	10	1	25	184	80.5	119.9	1.8
1992	200	1.20	240	1	0	241	10	1	26	214	99.6	122.7	2.0
Algeria													
1988	0	0.00	0	1	0	1	0	1	0	0	0.0	24.1	0.0
1989	0	0.00	0	1	0	1	0	1	0	0	0.0	24.7	0.0
1990	0	0.00	0	1	0	1	0	1	0	0	0.0	25.4	0.0
1991	0	0.00	0	1	0	1	0	1	0	0	0.0	26.0	0.0
1992	0	0.00	0	1	0	1	0	1	0	0	0.0	26.7	0.0
Egypt													
1988	10	1.80	18	0	0	18	0	0	13	5	100.0	51.3	0.4
1989	11	1.91	21	0	0	21	0	0	15	6	100.0	52.5	0.4
1990	18	2.28	41	15	0	56	0	0	15	41	73.2	53.8	1.0
1991	30	2.00	60	0	0	60	0	0	17	43	100.0	55.1	1.1
1992	40	2.00	80	0	0	80	0	0	18	62	100.0	56.4	1.4
Libya													
1988	0	0.00	0	0	0	0	0	0	0	0	0.0	4.0	0.0
1989	0	0.00	0	0	0	0	0	0	0	0	0.0	4.1	0.0
1990	0	0.00	0	0	0	0	0	0	0	0	0.0	4.2	0.0
1991	0	0.00	0	0	0	0	0	0	0	0	0.0	4.4	0.0
1992	0	0.00	0	0	0	0	0	0	0	0	0.0	4.5	0.0
Morocco													
1988	88	1.00	88	0	0	81	12	0	6	75	108.6	24.5	3.3
1989	110	0.95	105	0	0	107	10	0	8	99	98.1	25.1	4.3
1990	156	1.03	160	0	0	160	10	0	8	152	100.0	25.6	6.2
1991	131	0.83	109	40	0	149	10	0	8	141	73.2	26.2	5.7
1992	160	1.00	160	0	0	160	10	0	8	152	100.0	26.7	6.0
Tunisia													
1988	0	0.00	0	0	0	0	0	0	0	0	0.0	7.8	0.0
1989	0	0.00	0	0	0	0	0	0	0	0	0.0	7.9	0.0
1990	0	0.00	0	0	0	0	0	0	0	0	0.0	8.1	0.0
1991	0	0.00	0	0	0	0	0	0	0	0	0.0	8.3	0.0
1992	0	0.00	0	0	0	0	0	0	0	0	0.0	8.4	0.0

1/ Production/consumption. A self-sufficiency ratio greater than 100 is due to stock changes.

2/ Bahrain, Kuwait, Oman, Qatar, United Arab Emirates.

Source: USDA Foreign Agricultural Service, Production, Supply and Utilization database, April 1993; Agricultural Attache, Oilseeds reports, various issues.



Appendix table 21--Supply and use of total seed in North Africa and the Middle East, 1988-92

Country and year	Area harvest	Pro- Yield	Im- duction	Ex- ports	Consump- tion	Ending Stocks	Feed use	Food use	Amount crushed	Self- suffi- ciency ratio 1/	Popu- lation	Per capita consump- tion	
	1,000 ha	tons/ha	-----1,000 tons-----					-----		percent	millions	kilograms	
Middle East													
1988	2,189	2.84	3,097	477	22	3,253	364	292	160	2,801	95.2	178.4	18.2
1989	2,346	2.73	3,083	470	13	3,674	230	271	129	3,274	83.9	184.1	20.0
1990	2,111	2.79	2,883	488	20	3,506	75	274	128	3,104	82.2	189.7	18.5
1991	1,846	1.35	2,485	539	21	2,995	83	242	141	2,612	83.0	192.9	15.5
1992	2,030	1.43	2,903	567	21	3,458	74	267	136	3,055	84.0	199.4	17.3
Cyprus													
1988	0	0.00	0	0	0	0	0	0	0	0	0.0	0.7	0.0
1989	0	0.00	0	0	0	0	0	0	0	0	0.0	0.7	0.0
1990	0	0.00	0	0	0	0	0	0	0	0	0.0	0.7	0.0
1991	0	0.00	0	0	0	0	0	0	0	0	0.0	0.7	0.0
1992	0	0.00	0	0	0	0	0	0	0	0	0.0	0.7	0.0
Gulf States 2/													
1988	0	0.00	0	20	0	20	0	0	0	20	0.0	6.2	3.2
1989	0	0.00	0	20	0	20	0	0	0	20	0.0	6.5	3.1
1990	0	0.00	0	0	0	0	0	0	0	0	0.0	6.8	0.0
1991	0	0.00	0	20	0	20	0	0	0	20	0.0	5.8	3.5
1992	0	0.00	0	20	0	20	0	0	0	20	0.0	6.5	3.1
Iran													
1988	260	0.99	258	0	0	258	0	41	13	204	100.0	53.1	4.9
1989	297	0.86	255	0	0	255	0	41	13	201	100.0	55.0	4.6
1990	298	0.89	264	0	0	264	0	44	13	207	100.0	57.0	4.6
1991	273	0.93	255	0	0	255	0	41	13	201	100.0	59.1	4.3
1992	269	0.94	254	0	0	254	0	41	13	200	100.0	61.2	4.2
Iraq													
1988	79	0.51	40	0	0	40	0	29	11	0	100.0	17.1	2.3
1989	79	0.51	40	0	0	40	0	29	11	0	100.0	17.7	2.3
1990	79	0.51	40	0	0	40	0	29	11	0	100.0	18.4	2.2
1991	74	0.50	37	0	0	37	0	26	11	0	100.0	17.9	2.1
1992	74	0.50	37	0	0	37	0	26	11	0	100.0	18.5	2.0
Israel													
1988	58	2.24	130	381	9	513	28	84	39	390	25.3	4.1	125.5
1989	43	2.63	113	380	10	486	25	57	27	402	23.3	4.1	117.1
1990	39	2.97	116	390	16	508	7	60	22	426	22.8	4.3	118.1
1991	31	2.71	84	423	18	480	16	33	32	415	17.5	4.5	105.8
1992	39	2.72	106	483	18	572	15	53	32	487	18.5	4.7	120.5
Jordan													
1988	0	0.00	0	5	0	5	0	0	5	0	0.0	3.0	1.7
1989	0	0.00	0	5	0	5	0	0	5	0	0.0	3.1	1.6
1990	0	0.00	0	5	0	5	0	0	5	0	0.0	3.3	1.5
1991	0	0.00	0	5	0	5	0	0	5	0	0.0	3.4	1.5
1992	0	0.00	0	5	0	5	0	0	5	0	0.0	3.6	1.4
Lebanon													
1988	0	0.00	0	45	0	45	5	0	0	45	0.0	3.3	13.8
1989	0	0.00	0	52	0	52	5	0	0	52	0.0	3.3	15.7
1990	0	0.00	0	52	0	52	5	0	0	52	0.0	3.3	15.6
1991	0	0.00	0	53	0	53	5	0	0	53	0.0	3.4	15.6
1992	0	0.00	0	53	0	53	5	0	0	53	0.0	3.4	15.4
Saudi Arabia													
1988	0	0.00	0	6	0	6	0	5	1	0	0.0	15.3	0.4
1989	0	0.00	0	6	0	6	0	5	1	0	0.0	16.0	0.4
1990	0	0.00	0	6	0	6	0	5	1	0	0.0	16.3	0.4
1991	0	0.00	0	6	0	6	0	5	1	0	0.0	16.5	0.4
1992	0	0.00	0	6	0	6	0	5	1	0	0.0	17.1	0.4

Continued--

Appendix table 21--Supply and use of total seed in North Africa and the Middle East, 1988-92--Continued

Country and year	Area harvest	Pro- Yield	Im- duction	Ex- ports	Consump- tion	Ending Stocks	Feed use	Food use	Amount crushed	Self- suffi- ciency ratio 1/	Popu- lation	Per capita consump- tion	
	1,000 ha	tons/ha	-----1,000 tons-----							percent	millions	kilograms	
Syria													
1988	211	1.68	354	0	5	340	18	23	29	288	104.1	11.8	28.8
1989	190	1.76	335	0	1	330	22	24	28	278	101.5	12.2	26.9
1990	182	1.81	329	0	3	330	18	24	29	277	99.7	12.7	25.9
1991	197	2.01	395	0	3	394	16	24	29	341	100.3	13.2	29.8
1992	201	2.01	404	0	3	409	8	29	30	350	98.8	13.7	29.8
Turkey													
1988	1,499	1.51	2,257	20	8	1,968	313	104	62	1,802	114.7	54.6	36.0
1989	1,655	1.38	2,282	7	2	2,422	178	109	44	2,269	94.2	55.9	43.3
1990	1,431	1.45	2,076	35	1	2,243	45	106	47	2,090	92.6	57.1	39.3
1991	1,230	1.37	1,685	32	0	1,716	46	112	50	1,554	98.2	58.4	29.4
1992	1,407	1.47	2,072	0	0	2,072	46	112	44	1,916	100.0	59.6	34.7
Yemen													
1988	41	1.41	29	0	0	29	0	3	0	26	100.0	9.2	3.2
1989	41	1.41	29	0	0	29	0	3	0	26	100.0	9.4	3.1
1990	41	1.41	29	0	0	29	0	3	0	26	100.0	9.7	3.0
1991	41	0.71	29	0	0	29	0	1	0	28	100.0	10.1	2.9
1992	40	0.75	30	0	0	30	0	1	0	29	100.0	10.4	2.9
North Africa													
1988	640	1.33	848	114	1	956	18	55	120	781	88.7	111.7	8.6
1989	647	1.34	869	83	1	953	16	90	118	745	91.2	114.4	8.3
1990	692	1.38	955	87	3	1,039	16	90	69	880	91.9	117.1	8.9
1991	622	1.40	871	86	5	952	16	86	62	804	91.5	119.9	7.9
1992	644	1.37	883	71	5	949	16	86	70	793	93.0	122.7	7.7
Algeria													
1988	0	0.00	0	16	0	16	0	16	0	0	0.0	24.1	0.7
1989	0	0.00	0	16	0	16	0	16	0	0	0.0	24.7	0.6
1990	0	0.00	0	16	0	16	0	16	0	0	0.0	25.4	0.6
1991	0	0.00	0	16	0	16	0	16	0	0	0.0	26.0	0.6
1992	0	0.00	0	16	0	16	0	16	0	0	0.0	26.7	0.6
Egypt													
1988	497	1.35	673	76	1	748	0	39	49	660	90.0	51.3	14.6
1989	485	1.39	676	67	1	742	0	74	43	625	91.1	52.5	14.1
1990	488	1.52	743	43	3	783	0	74	38	671	94.9	53.8	14.6
1991	442	1.62	717	0	5	712	0	70	39	603	100.7	55.1	12.9
1992	435	1.54	672	25	5	692	0	70	40	582	97.1	56.4	12.3
Libya													
1988	0	0.00	0	0	0	0	0	0	0	0	0.0	4.0	0.0
1989	0	0.00	0	0	0	0	0	0	0	0	0.0	4.1	0.0
1990	0	0.00	0	0	0	0	0	0	0	0	0.0	4.2	0.0
1991	0	0.00	0	0	0	0	0	0	0	0	0.0	4.4	0.0
1992	0	0.00	0	0	0	0	0	0	0	0	0.0	4.5	0.0
Morocco													
1988	143	1.22	175	22	0	192	18	0	71	121	91.1	24.5	7.8
1989	162	1.19	193	0	0	195	16	0	75	120	99.0	25.1	7.8
1990	204	1.04	212	28	0	240	16	0	31	209	88.3	25.6	9.4
1991	180	0.86	154	70	0	224	16	0	23	201	68.8	26.2	8.6
1992	209	1.01	211	30	0	241	16	0	30	211	87.6	26.7	9.0
Tunisia													
1988	0	0.00	0	0	0	0	0	0	0	0	0.0	7.8	0.0
1989	0	0.00	0	0	0	0	0	0	0	0	0.0	7.9	0.0
1990	0	0.00	0	0	0	0	0	0	0	0	0.0	8.1	0.0
1991	0	0.00	0	0	0	0	0	0	0	0	0.0	8.3	0.0
1992	0	0.00	0	0	0	0	0	0	0	0	0.0	8.4	0.0

1/ Production/consumption. A self-sufficiency ratio greater than 100 is due to stock changes.

2/ Bahrain, Kuwait, Oman, Qatar, United Arab Emirates.

Source: USDA Foreign Agricultural Service, Production, Supply and Utilization database, April 1993; Agricultural Attache, Oilseeds reports, various issues.



Appendix table 22--Supply and use of soybeans in North Africa and the Middle East, 1988-92

Country and year	Area harvest	Pro- Yield	Im- duction	Ex- ports	Consump- tion	Ending Stocks	Feed use	Food use	Amount crushed	Self- suffi- ciency ratio 1/	Popu- lation	Per capita consump- tion	
	1,000 ha	tons/ha	-----1,000 tons-----							percent	millions	kilograms	
Middle East													
1988	120	1.47	176	433	0	609	46	30	16	563	28.9	178.4	3.4
1989	160	1.44	230	419	0	647	48	24	2	621	35.5	184.1	3.5
1990	115	1.89	217	409	0	643	31	25	2	616	33.7	189.7	3.4
1991	105	1.78	187	467	0	646	39	30	2	614	28.9	192.9	3.3
1992	106	1.79	190	525	0	722	32	30	2	690	26.3	199.4	3.6
Cyprus													
1988	0	0.00	0	0	0	0	0	0	0	0.0	0.7	0.0	
1989	0	0.00	0	0	0	0	0	0	0	0.0	0.7	0.0	
1990	0	0.00	0	0	0	0	0	0	0	0.0	0.7	0.0	
1991	0	0.00	0	0	0	0	0	0	0	0.0	0.7	0.0	
1992	0	0.00	0	0	0	0	0	0	0	0.0	0.7	0.0	
Gulf States 2/													
1988	0	0.00	0	20	0	20	0	0	0	20	0.0	6.2	3.2
1989	0	0.00	0	20	0	20	0	0	0	20	0.0	6.5	3.1
1990	0	0.00	0	0	0	0	0	0	0	0	0.0	6.8	0.0
1991	0	0.00	0	20	0	20	0	0	0	20	0.0	5.8	3.5
1992	0	0.00	0	20	0	20	0	0	0	20	0.0	6.5	3.1
Iran													
1988	50	1.80	90	0	0	90	0	10	0	80	100.0	53.1	1.7
1989	50	1.80	90	0	0	90	0	10	0	80	100.0	55.0	1.6
1990	50	1.80	90	0	0	90	0	10	0	80	100.0	57.0	1.6
1991	50	1.80	90	0	0	90	0	10	0	80	100.0	59.1	1.5
1992	50	1.80	90	0	0	90	0	10	0	80	100.0	61.2	1.5
Iraq													
1988	0	0.00	0	0	0	0	0	0	0	0	0.0	17.1	0.0
1989	0	0.00	0	0	0	0	0	0	0	0	0.0	17.7	0.0
1990	0	0.00	0	0	0	0	0	0	0	0	0.0	18.4	0.0
1991	0	0.00	0	0	0	0	0	0	0	0	0.0	17.9	0.0
1992	0	0.00	0	0	0	0	0	0	0	0	0.0	18.5	0.0
Israel													
1988	0	0.00	0	366	0	377	28	12	15	350	0.0	4.1	92.2
1989	0	0.00	0	370	0	373	25	0	1	372	0.0	4.1	89.9
1990	0	0.00	0	378	0	396	7	0	1	395	0.0	4.3	92.0
1991	0	0.00	0	415	0	406	16	0	1	405	0.0	4.5	89.5
1992	0	0.00	0	475	0	476	15	0	1	475	0.0	4.7	100.3
Jordan													
1988	0	0.00	0	0	0	0	0	0	0	0	0.0	3.0	0.0
1989	0	0.00	0	0	0	0	0	0	0	0	0.0	3.1	0.0
1990	0	0.00	0	0	0	0	0	0	0	0	0.0	3.3	0.0
1991	0	0.00	0	0	0	0	0	0	0	0	0.0	3.4	0.0
1992	0	0.00	0	0	0	0	0	0	0	0	0.0	3.6	0.0
Lebanon													
1988	0	0.00	0	25	0	25	5	0	0	25	0.0	3.3	7.6
1989	0	0.00	0	27	0	27	5	0	0	27	0.0	3.3	8.2
1990	0	0.00	0	27	0	27	5	0	0	27	0.0	3.3	8.1
1991	0	0.00	0	28	0	28	5	0	0	28	0.0	3.4	8.3
1992	0	0.00	0	28	0	28	5	0	0	28	0.0	3.4	8.1
Saudi Arabia													
1988	0	0.00	0	2	0	2	0	1	1	0	0.0	15.3	0.1
1989	0	0.00	0	2	0	2	0	1	1	0	0.0	16.0	0.1
1990	0	0.00	0	2	0	2	0	1	1	0	0.0	16.3	0.1
1991	0	0.00	0	2	0	2	0	1	1	0	0.0	16.5	0.1
1992	0	0.00	0	2	0	2	0	1	1	0	0.0	17.1	0.1

Continued--

Appendix table 22--Supply and use of soybeans in North Africa and the Middle East, 1988-92--Continued

Country and year	Area harvest	Pro- Yield	Im- duction	Ex- ports	Consump- tion	Ending Stocks	Feed use	Food use	Amount crushed	Self- suffi- ciency ratio 1/	Popu- lation	Per capita consump- tion	
	1,000 ha	tons/ha	-----1,000 tons-----							percent	millions	kilograms	
Syria													
1988	10	1.60	16	0	0	5	11	1	0	4	320.0	11.8	0.4
1989	10	2.00	20	0	0	16	15	1	0	15	125.0	12.2	1.3
1990	5	1.40	7	0	0	8	14	1	0	7	87.5	12.7	0.6
1991	5	1.40	7	0	0	8	13	1	0	7	87.5	13.2	0.6
1992	6	1.67	10	0	0	16	7	1	0	15	62.5	13.7	1.2
Turkey													
1988	60	1.17	70	20	0	90	2	6	0	84	77.8	54.6	1.6
1989	100	1.20	120	0	0	119	3	12	0	107	100.8	55.9	2.1
1990	60	2.00	120	2	0	120	5	13	0	107	100.0	57.1	2.1
1991	50	1.80	90	2	0	92	5	18	0	74	97.8	58.4	1.6
1992	50	1.80	90	0	0	90	5	18	0	72	100.0	59.6	1.5
Yemen													
1988	0	0.00	0	0	0	0	0	0	0	0	0.0	9.2	0.0
1989	0	0.00	0	0	0	0	0	0	0	0	0.0	9.4	0.0
1990	0	0.00	0	0	0	0	0	0	0	0	0.0	9.7	0.0
1991	0	0.00	0	0	0	0	0	0	0	0	0.0	10.1	0.0
1992	0	0.00	0	0	0	0	0	0	0	0	0.0	10.4	0.0
North Africa													
1988	52	2.54	132	98	0	232	0	6	0	226	56.9	111.7	2.1
1989	39	2.33	91	67	0	158	0	4	0	154	57.6	114.4	1.4
1990	46	2.48	114	42	0	156	0	4	0	152	73.1	117.1	1.3
1991	53	2.51	133	15	0	148	0	5	0	143	89.9	119.9	1.2
1992	45	2.29	103	40	0	143	0	5	0	138	72.0	122.7	1.2
Algeria													
1988	0	0.00	0	0	0	0	0	0	0	0	0.0	24.1	0.0
1989	0	0.00	0	0	0	0	0	0	0	0	0.0	24.7	0.0
1990	0	0.00	0	0	0	0	0	0	0	0	0.0	25.4	0.0
1991	0	0.00	0	0	0	0	0	0	0	0	0.0	26.0	0.0
1992	0	0.00	0	0	0	0	0	0	0	0	0.0	26.7	0.0
Egypt													
1988	50	2.60	130	76	0	206	0	6	0	200	63.1	51.3	4.0
1989	39	2.33	91	67	0	158	0	4	0	154	57.6	52.5	3.0
1990	41	2.59	106	28	0	134	0	4	0	130	79.1	53.8	2.5
1991	42	2.86	120	0	0	120	0	5	0	115	100.0	55.1	2.2
1992	30	2.83	85	25	0	110	0	5	0	105	77.3	56.4	2.0
Libya													
1988	0	0.00	0	0	0	0	0	0	0	0	0.0	4.0	0.0
1989	0	0.00	0	0	0	0	0	0	0	0	0.0	4.1	0.0
1990	0	0.00	0	0	0	0	0	0	0	0	0.0	4.2	0.0
1991	0	0.00	0	0	0	0	0	0	0	0	0.0	4.4	0.0
1992	0	0.00	0	0	0	0	0	0	0	0	0.0	4.5	0.0
Morocco													
1988	2	1.00	2	22	0	26	0	0	0	26	7.7	24.5	1.1
1989	0	0.00	0	0	0	0	0	0	0	0	0.0	25.1	0.0
1990	5	1.60	8	14	0	22	0	0	0	22	36.4	25.6	0.9
1991	11	1.18	13	15	0	28	0	0	0	28	46.4	26.2	1.1
1992	15	1.20	18	15	0	33	0	0	0	33	54.5	26.7	1.2
Tunisia													
1988	0	0.00	0	0	0	0	0	0	0	0	0.0	7.8	0.0
1989	0	0.00	0	0	0	0	0	0	0	0	0.0	7.9	0.0
1990	0	0.00	0	0	0	0	0	0	0	0	0.0	8.1	0.0
1991	0	0.00	0	0	0	0	0	0	0	0	0.0	8.3	0.0
1992	0	0.00	0	0	0	0	0	0	0	0	0.0	8.4	0.0

1/ Production/consumption. A self-sufficiency ratio greater than 100 is due to stock changes.

2/ Bahrain, Kuwait, Oman, Qatar, United Arab Emirates.

Source: USDA Foreign Agricultural Service, Production, Supply and Utilization database, April 1993; Agricultural Attache, Oilseeds reports, various issues.



Appendix table 23--Supply and use of soymeal in North Africa and the Middle East, 1988-92

Country and year	Amount crushed	Extraction rate	Production	Imports	Exports	Consumption	Ending Stock	Feed	Self-sufficiency ratio 1/	Population	Per capita consumption
	1,000 tons	percent	-----1,000 tons-----						percent	millions	kilograms
Middle East											
1988	565	0.79	448	905	14	1,337	54	1,334	33.5	178.4	7.5
1989	621	0.80	496	1,221	21	1,688	62	1,685	29.4	184.1	9.2
1990	616	0.80	492	1,035	10	1,530	49	1,527	32.2	189.7	8.1
1991	614	0.79	487	1,364	12	1,828	60	1,825	26.6	192.9	9.5
1992	690	0.80	549	1,360	14	1,893	62	1,890	29.0	199.4	9.5
Cyprus											
1988	0	0.00	0	55	0	55	0	55	0.0	0.7	78.6
1989	0	0.00	0	65	0	65	0	65	0.0	0.7	94.5
1989	0	0.00	0	65	0	65	0	65	0.0	0.7	93.5
1990	0	0.00	0	67	0	67	0	67	0.0	0.7	95.4
1991	0	0.00	0	67	0	67	0	67	0.0	0.7	94.4
1992											
Gulf States 2/											
1988	20	0.80	16	0	0	16	0	16	100.0	6.2	2.6
1989	20	0.80	16	0	0	16	0	16	100.0	6.5	2.5
1990	0	0.00	0	0	0	0	0	0	0.0	6.8	0.0
1991	20	0.80	16	0	0	16	0	16	100.0	5.8	2.8
1992	20	0.80	16	0	0	16	0	16	100.0	6.5	2.5
Iran											
1988	80	0.80	64	250	0	314	0	314	20.4	53.1	5.9
1989	80	0.80	64	300	0	364	0	364	17.6	55.0	6.6
1990	80	0.80	64	300	0	364	0	364	17.6	57.0	6.4
1991	80	0.80	64	350	0	414	0	414	15.5	59.1	7.0
1992	80	0.80	64	350	0	414	0	414	15.5	61.2	6.8
Iraq											
1988	0	0.00	0	127	0	127	0	127	0.0	17.1	7.4
1989	0	0.00	0	313	0	313	0	313	0.0	17.7	17.6
1990	0	0.00	0	0	0	0	0	0	ERR	18.4	0.0
1991	0	0.00	0	52	0	52	0	52	0.0	17.9	2.9
1992	0	0.00	0	52	0	52	0	52	0.0	18.5	2.8
Israel											
1988	350	0.79	276	6	5	283	22	280	97.5	4.1	69.2
1989	372	0.80	296	5	1	299	23	296	99.0	4.1	72.1
1990	395	0.79	314	4	0	332	9	329	94.6	4.3	77.2
1991	405	0.80	322	33	0	345	19	342	93.3	4.5	76.0
1992	475	0.80	378	33	0	410	20	407	92.2	4.7	86.4
Jordan											
1988	0	0.00	0	50	0	42	8	42	0.0	3.0	14.0
1989	0	0.00	0	70	0	70	8	70	0.0	3.1	22.3
1990	0	0.00	0	70	0	70	8	70	0.0	3.3	21.4
1991	0	0.00	0	72	0	72	8	72	0.0	3.4	21.1
1992	0	0.00	0	74	0	75	7	75	0.0	3.6	21.1
Lebanon											
1988	25	0.80	20	97	6	111	2	111	18.0	3.3	33.9
1989	27	0.78	21	110	8	123	2	123	17.1	3.3	37.2
1990	27	0.78	21	110	8	123	2	123	17.1	3.3	36.8
1991	28	0.79	22	115	8	129	2	129	17.1	3.4	38.1
1992	28	0.79	22	115	8	129	2	129	17.1	3.4	37.5
Saudi Arabia											
1988	0	0.00	0	192	1	191	20	191	0.0	15.3	12.5
1989	0	0.00	0	230	1	229	20	229	0.0	16.0	14.3
1990	0	0.00	0	250	1	249	20	249	0.0	16.3	15.3
1991	0	0.00	0	325	1	324	20	324	0.0	16.5	19.6
1992	0	0.00	0	329	1	328	20	328	0.0	17.1	19.2

Continued--

Appendix table 23--Supply and use of soymeal in North Africa and the Middle East, 1988-92--Continued

Country and year	Amount crushed	Extraction rate	Production	Imports	Exports	Consumption	Ending Stock	Feed	Self-sufficiency ratio 1/	Population	Per capita consumption
	1,000 tons	percent	-----1,000 tons-----						percent	millions	kilograms
<b>Syria</b>											
1988	6	0.83	5	40	0	45	2	45	11.1	11.8	3.8
1989	15	0.80	12	85	0	90	9	90	13.3	12.2	7.3
1990	7	0.86	6	105	0	110	10	110	5.5	12.7	8.6
1991	7	0.86	6	110	0	115	11	115	5.2	13.2	8.7
1992	15	0.80	12	110	0	120	13	120	10.0	13.7	8.7
<b>Turkey</b>											
1988	84	0.80	67	88	2	153	0	153	43.8	54.6	2.8
1989	107	0.81	87	43	11	119	0	119	73.1	55.9	2.1
1990	107	0.81	87	131	1	217	0	217	40.1	57.1	3.8
1991	74	0.77	57	240	3	294	0	294	19.4	58.4	5.0
1992	72	0.79	57	230	5	282	0	282	20.2	59.6	4.7
<b>Yemen</b>											
1988	0	0.00	0	0	0	0	0	0	0.0	9.2	0.0
1989	0	0.00	0	0	0	0	0	0	0.0	9.4	0.0
1990	0	0.00	0	0	0	0	0	0	0.0	9.7	0.0
1991	0	0.00	0	0	0	0	0	0	0.0	10.1	0.0
1992	0	0.00	0	0	0	0	0	0	0.0	10.4	0.0
<b>North Africa</b>											
1988	225	0.80	180	918	0	1,084	36	1,084	16.6	111.7	9.7
1989	154	0.79	121	909	0	1,032	34	1,032	11.7	114.4	9.0
1990	152	0.79	120	877	0	983	48	983	12.2	117.1	8.4
1991	143	0.80	114	859	0	983	38	983	11.6	119.9	8.2
1992	128	0.80	102	891	0	997	34	997	10.2	122.7	8.1
<b>Algeria</b>											
1988	0	0.00	0	425	0	425	0	425	0.0	24.1	17.6
1989	0	0.00	0	430	0	430	0	430	0.0	24.7	17.4
1990	0	0.00	0	440	0	440	0	440	0.0	25.4	17.3
1991	0	0.00	0	440	0	440	0	440	0.0	26.0	16.9
1992	0	0.00	0	440	0	440	0	440	0.0	26.7	16.5
<b>Egypt</b>											
1988	200	0.80	160	280	0	430	20	430	37.2	51.3	8.4
1989	154	0.79	121	269	0	390	20	390	31.0	52.5	7.4
1990	130	0.79	103	217	0	320	20	320	32.2	53.8	5.9
1991	115	0.80	92	200	0	292	20	292	31.5	55.1	5.3
1992	95	0.80	76	230	0	306	20	306	24.8	56.4	5.4
<b>Libya</b>											
1988	0	0.00	0	85	0	85	0	85	0.0	4.0	21.4
1989	0	0.00	0	90	0	90	0	90	0.0	4.1	22.0
1990	0	0.00	0	95	0	95	0	95	0.0	4.2	22.5
1991	0	0.00	0	96	0	96	0	96	0.0	4.4	22.1
1992	0	0.00	0	96	0	96	0	96	0.0	4.5	21.4
<b>Morocco</b>											
1988	25	0.80	20	0	0	16	6	16	125.0	24.5	0.7
1989	0	0.00	0	0	0	2	4	2	0.0	25.1	0.1
1990	22	0.77	17	3	0	6	18	6	283.3	25.6	0.2
1991	28	0.79	22	0	0	32	8	32	68.8	26.2	1.2
1992	33	0.79	26	0	0	30	4	30	86.7	26.7	1.1
<b>Tunisia</b>											
1988	0	0.00	0	128	0	128	10	128	0.0	7.8	16.5
1989	0	0.00	0	120	0	120	10	120	0.0	7.9	15.1
1990	0	0.00	0	122	0	122	10	122	0.0	8.1	15.1
1991	0	0.00	0	123	0	123	10	123	0.0	8.3	14.9
1992	0	0.00	0	125	0	125	10	125	0.0	8.4	14.8

1/ Production/consumption. A self-sufficiency ratio greater than 100 is due to stock changes.

2/ Bahrain, Kuwait, Oman, Qatar, United Arab Emirates.

Source: USDA Foreign Agricultural Service, Production, Supply and Utilization database, April 1993; Agricultural Attache, Oilseeds reports, various issues.



Appendix table 24--Supply and use of total meals in North Africa and the Middle East, 1988-92

Country and year	Amount crushed	Extraction rate	Production	Imports	Exports	Consumption	Ending Stocks	Feed	Self-sufficiency ratio 1/	Population	Per capita consumption
	1,000 tons	percent	-----1,000 tons-----					percent	millions	kilograms	
Middle East											
1988	2,803	0.51	1,430	1,041	55	2,414	56	2,411	59.2	178.4	13.5
1989	3,274	0.49	1,620	1,433	29	3,008	72	3,005	53.9	184.1	16.3
1990	3,104	0.51	1,573	1,288	19	2,825	89	2,822	55.7	189.7	14.9
1991	2,612	0.53	1,373	1,593	17	2,946	92	2,943	46.6	192.9	15.3
1992	3,055	0.52	1,580	1,575	19	3,136	92	3,133	50.4	199.4	15.7
Cyprus											
1988	0	0.00	0	56	0	56	0	56	0.0	0.7	81.5
1989	0	0.00	0	66	0	66	0	66	0.0	0.7	95.0
1990	0	0.00	0	66	0	66	0	66	0.0	0.7	94.0
1991	0	0.00	0	68	0	68	0	68	0.0	0.7	95.8
1992	0	0.00	0	68	0	68	0	68	0.0	0.7	94.9
Gulf States 2/											
1988	20	0.80	16	0	0	16	0	16	100.0	6.2	2.6
1989	20	0.80	16	0	0	16	0	16	100.0	6.5	2.5
1990	0	0.00	0	0	0	0	0	0	0.0	6.8	0.0
1991	20	0.80	16	0	0	16	0	16	100.0	5.8	2.8
1992	20	0.80	16	0	0	16	0	16	100.0	6.5	2.5
Iran											
1988	204	0.60	122	324	0	446	0	446	27.4	53.1	8.4
1989	201	0.60	120	334	0	454	0	454	26.4	55.0	8.3
1990	207	0.59	123	381	0	504	0	504	24.4	57.0	8.8
1991	201	0.60	120	435	0	555	0	555	21.6	59.1	9.4
1992	200	0.60	119	435	0	554	0	554	21.5	61.2	9.1
Iraq											
1988	0	0.00	0	127	0	127	0	127	0.0	17.1	7.4
1989	0	0.00	0	313	0	313	0	313	0.0	17.7	17.6
1990	0	0.00	0	0	0	0	0	0	ERR	18.4	0.0
1991	0	0.00	0	52	0	52	0	52	0.0	17.9	2.9
1992	0	0.00	0	52	0	52	0	52	0.0	18.5	2.8
Israel											
1988	390	0.75	294	44	8	336	24	333	87.5	4.1	82.2
1989	402	0.76	305	46	3	339	33	336	90.0	4.1	81.7
1990	426	0.77	330	33	1	376	19	373	87.8	4.3	87.4
1991	415	0.79	327	52	0	377	21	374	86.7	4.5	83.1
1992	487	0.79	384	52	0	437	20	434	87.9	4.7	92.0
Jordan											
1988	0	0.00	0	50	0	42	8	42	0.0	3.0	14.0
1989	0	0.00	0	70	0	70	8	70	0.0	3.1	22.3
1990	0	0.00	0	70	0	70	8	70	0.0	3.3	21.4
1991	0	0.00	0	72	0	72	8	72	0.0	3.4	21.1
1992	0	0.00	0	74	0	75	7	75	0.0	3.6	21.1
Lebanon											
1988	45	0.67	30	112	6	136	2	136	22.1	3.3	41.6
1989	52	0.60	31	140	8	163	2	163	19.0	3.3	49.4
1990	52	0.60	31	185	8	178	32	178	17.4	3.3	53.3
1991	53	0.60	32	160	8	184	32	184	17.4	3.4	54.3
1992	53	0.64	34	160	8	186	32	186	18.3	3.4	54.1
Saudi Arabia											
1988	0	0.00	0	195	1	194	20	194	0.0	15.3	12.7
1989	0	0.00	0	234	1	233	20	233	0.0	16.0	14.6
1990	0	0.00	0	254	1	253	20	253	0.0	16.3	15.5
1991	0	0.00	0	329	1	328	20	328	0.0	16.5	19.9
1992	0	0.00	0	329	1	328	20	328	0.0	17.1	19.2

Continued--

Appendix table 24--Supply and use of total meals in North Africa and the Middle East, 1988-92--Continued

Country and year	Amount crushed	Extraction rate	Production	Imports	Exports	Consumption	Ending Stocks	Feed	Self-sufficiency ratio 1/	Population	Per capita consumption
	1,000 tons	percent	-----1,000 tons-----						percent	millions	kilograms
Syria											
1988	290	0.47	136	40	0	176	2	176	77.3	11.8	14.9
1989	278	0.48	134	85	0	212	9	212	63.2	12.2	17.3
1990	277	0.47	130	105	0	234	10	234	55.6	12.7	18.4
1991	341	0.48	162	110	0	271	11	271	59.8	13.2	20.5
1992	350	0.48	167	110	0	275	13	275	60.7	13.7	20.0
Turkey											
1988	1,802	0.45	808	93	40	861	0	861	93.8	54.6	15.8
1989	2,269	0.44	990	145	17	1,118	0	1,118	88.6	55.9	20.0
1990	2,090	0.45	935	194	9	1,120	0	1,120	83.5	57.1	19.6
1991	1,554	0.45	703	315	8	1,010	0	1,010	69.6	58.4	17.3
1992	1,916	0.44	846	295	10	1,131	0	1,131	74.8	59.6	19.0
Yemen											
1988	26	0.46	12	0	0	12	0	12	100.0	9.2	1.3
1989	26	0.46	12	0	0	12	0	12	100.0	9.4	1.3
1990	26	0.46	12	0	0	12	0	12	100.0	9.7	1.2
1991	28	0.46	13	0	0	13	0	13	100.0	10.1	1.3
1992	29	0.48	14	0	0	14	0	14	100.0	10.4	1.3
North Africa											
1988	940	0.53	495	1,000	2	1,474	45	1,474	33.6	111.7	13.2
1989	883	0.65	573	976	1	1,546	47	1,546	37.1	114.4	13.5
1990	999	0.61	611	966	4	1,568	52	1,568	39.0	117.1	13.4
1991	969	0.47	460	952	1	1,421	42	1,421	32.4	119.9	11.9
1992	939	0.47	441	983	1	1,428	37	1,428	30.9	122.7	11.6
Algeria											
1988	0	0.00	0	431	0	431	0	431	0.0	24.1	17.9
1989	0	0.00	0	435	0	435	0	435	0.0	24.7	17.6
1990	0	0.00	0	444	0	444	0	444	0.0	25.4	17.5
1991	0	0.00	0	445	0	445	0	445	0.0	26.0	17.1
1992	0	0.00	0	445	0	445	0	445	0.0	26.7	16.7
Egypt											
1988	660	0.60	397	288	0	675	20	675	58.8	51.3	13.2
1989	625	0.78	488	275	0	763	20	763	64.0	52.5	14.5
1990	670	0.72	482	224	0	705	21	705	68.4	53.8	13.1
1991	618	0.53	327	208	0	535	21	535	61.1	55.1	9.7
1992	578	0.52	301	238	0	540	20	540	55.7	56.4	9.6
Libya											
1988	0	0.00	0	153	0	153	0	153	0.0	4.0	38.5
1989	0	0.00	0	146	0	146	0	146	0.0	4.1	35.6
1990	0	0.00	0	171	0	171	0	171	0.0	4.2	40.5
1991	0	0.00	0	175	0	175	0	175	0.0	4.4	40.2
1992	0	0.00	0	175	0	175	0	175	0.0	4.5	39.0
Morocco											
1988	280	0.35	98	0	2	87	15	87	112.6	24.5	3.5
1989	258	0.33	85	0	1	82	17	82	103.7	25.1	3.3
1990	329	0.39	129	5	4	126	21	126	102.4	25.6	4.9
1991	351	0.38	133	1	1	143	11	143	93.0	26.2	5.5
1992	361	0.39	140	0	1	143	7	143	97.9	26.7	5.4
Tunisia											
1988	0	0.00	0	128	0	128	10	128	0.0	7.8	16.5
1989	0	0.00	0	120	0	120	10	120	0.0	7.9	15.1
1990	0	0.00	0	122	0	122	10	122	0.0	8.1	15.1
1991	0	0.00	0	123	0	123	10	123	0.0	8.3	14.9
1992	0	0.00	0	125	0	125	10	125	0.0	8.4	14.8

1/ Production/consumption. A self-sufficiency ratio greater than 100 is due to stock changes.

2/ Bahrain, Kuwait, Oman, Qatar, United Arab Emirates.

Source: USDA Foreign Agricultural Service, Production, Supply and Utilization database, April 1993; Agricultural Attache, Oilseeds reports, various issues.



Appendix table 25--Supply and use of soybean oil in North Africa and the Middle East, 1988-92

Country and year	Amount crushed	Extraction rate	Production	Imports	Exports	Consumption	Ending stocks	Food use	Self-sufficiency ratio 1/	Population	Per capita consumption
	1,000 tons	percent	-----1,000 tons-----						percent	millions	kilograms
Middle East											
1988	565	0.18	100	610	8	703	14	676	14.2	178.4	3.9
1989	621	0.18	110	740	10	846	8	813	13.0	184.1	4.6
1990	616	0.18	109	618	8	709	18	673	15.4	189.7	3.7
1991	614	0.18	108	617	8	713	22	674	15.1	192.9	3.7
1992	690	0.18	121	635	8	744	26	698	16.3	199.4	3.7
Cyprus											
1988	0	0.00	0	12	5	7	0	7	0.0	0.7	10.0
1989	0	0.00	0	15	5	10	0	10	0.0	0.7	14.5
1990	0	0.00	0	15	5	10	0	10	0.0	0.7	14.4
1991	0	0.00	0	16	5	11	0	11	0.0	0.7	15.7
1992	0	0.00	0	16	5	11	0	11	0.0	0.7	15.5
Gulf States 2/											
1988	20	0.20	4	2	0	6	0	6	66.7	6.2	1.0
1989	20	0.20	4	2	0	6	0	6	66.7	6.5	0.9
1990	0	0.00	0	0	0	0	0	0	0.0	6.8	0.0
1991	20	0.20	4	2	0	6	0	6	66.7	5.8	1.0
1992	20	0.20	4	2	0	6	0	6	66.7	6.5	0.9
Iran											
1988	80	0.18	14	375	0	389	0	389	3.6	53.1	7.3
1989	80	0.18	14	552	0	566	0	566	2.5	55.0	10.3
1990	80	0.18	14	417	0	431	0	431	3.2	57.0	7.6
1991	80	0.18	14	400	0	414	0	414	3.4	59.1	7.0
1992	80	0.18	14	410	0	424	0	424	3.3	61.2	6.9
Iraq											
1988	0	0.00	0	1	0	1	0	1	0.0	17.1	0.1
1989	0	0.00	0	1	0	1	0	1	0.0	17.7	0.1
1990	0	0.00	0	0	0	0	0	0	0.0	18.4	0.0
1991	0	0.00	0	1	0	1	0	1	0.0	17.9	0.1
1992	0	0.00	0	1	0	1	0	1	0.0	18.5	0.1
Israel											
1988	350	0.18	62	4	0	66	12	40	93.9	4.1	16.1
1989	372	0.18	66	2	0	74	6	48	89.2	4.1	17.8
1990	395	0.18	70	9	0	71	14	42	98.6	4.3	16.5
1991	405	0.18	72	2	0	70	18	40	102.9	4.5	15.4
1992	475	0.18	84	2	0	84	20	50	100.0	4.7	17.7
Jordan											
1988	0	0.00	0	5	0	6	1	5	0.0	3.0	2.0
1989	0	0.00	0	8	0	8	1	7	0.0	3.1	2.5
1990	0	0.00	0	8	0	8	1	7	0.0	3.3	2.4
1991	0	0.00	0	9	0	9	1	8	0.0	3.4	2.6
1992	0	0.00	0	10	0	10	1	9	0.0	3.6	2.8
Lebanon											
1988	25	0.16	4	29	2	31	1	31	12.9	3.3	9.5
1989	27	0.19	5	40	2	43	1	43	11.6	3.3	13.0
1990	27	0.19	5	40	2	43	1	43	11.6	3.3	12.9
1991	28	0.18	5	42	2	45	1	45	11.1	3.4	13.3
1992	28	0.18	5	44	2	47	1	47	10.6	3.4	13.7
Saudi Arabia											
1988	0	0.00	0	4	1	3	0	3	0.0	15.3	0.2
1989	0	0.00	0	4	1	3	0	3	0.0	16.0	0.2
1990	0	0.00	0	5	1	4	0	4	0.0	16.3	0.2
1991	0	0.00	0	5	1	4	0	4	0.0	16.5	0.2
1992	0	0.00	0	5	1	4	0	4	0.0	17.1	0.2

Continued--

Appendix table 25--Supply and use of soybean oil in North Africa and the Middle East, 1988-92--Continued

Country and year	Amount crushed	Extraction rate	Production	Imports	Exports	Consumption	Ending stocks	Food use	Self-sufficiency ratio 1/	Population 1/	Per capita consumption
	1,000 tons	percent	-----1,000 tons-----						percent	millions	kilograms
<b>Syria</b>											
1988	6	0.17	1	0	0	1	0	1	100.0	11.8	0.1
1989	15	0.13	2	5	0	7	0	7	28.6	12.2	0.6
1990	7	0.14	1	10	0	9	2	9	11.1	12.7	0.7
1991	7	0.14	1	10	0	11	2	11	9.1	13.2	0.8
1992	15	0.13	2	15	0	15	4	15	13.3	13.7	1.1
<b>Turkey</b>											
1988	84	0.18	15	178	0	193	0	193	7.8	54.6	3.5
1989	107	0.18	19	111	2	128	0	122	14.8	55.9	2.3
1990	107	0.18	19	114	0	133	0	127	14.3	57.1	2.3
1991	74	0.16	12	130	0	142	0	134	8.5	58.4	2.4
1992	72	0.17	12	130	0	142	0	131	8.5	59.6	2.4
<b>Yemen</b>											
1988	0	0.00	0	0	0	0	0	0	0.0	9.2	0.0
1989	0	0.00	0	0	0	0	0	0	0.0	9.4	0.0
1990	0	0.00	0	0	0	0	0	0	0.0	9.7	0.0
1991	0	0.00	0	0	0	0	0	0	0.0	10.1	0.0
1992	0	0.00	0	0	0	0	0	0	0.0	10.4	0.0
<b>North Africa</b>											
1988	226	0.17	38	199	0	236	18	234	16.1	111.7	2.1
1989	154	0.17	26	207	0	235	16	229	11.1	114.4	2.1
1990	152	0.17	26	138	0	162	18	156	16.0	117.1	1.4
1991	143	0.17	24	316	0	335	23	328	7.2	119.9	2.8
1992	128	0.17	22	312	0	339	18	332	6.5	122.7	2.8
<b>Algeria</b>											
1988	0	0.00	0	4	0	4	0	4	0.0	24.1	0.2
1989	0	0.00	0	9	0	9	0	9	0.0	24.7	0.4
1990	0	0.00	0	23	0	23	0	23	0.0	25.4	0.9
1991	0	0.00	0	100	0	100	0	100	0.0	26.0	3.8
1992	0	0.00	0	100	0	100	0	100	0.0	26.7	3.7
<b>Egypt</b>											
1988	200	0.17	34	0	0	34	0	34	100.0	51.3	0.7
1989	154	0.17	26	2	0	28	0	24	92.9	52.5	0.5
1990	130	0.17	22	0	0	22	0	18	100.0	53.8	0.4
1991	115	0.17	19	0	0	19	0	14	100.0	55.1	0.3
1992	95	0.17	16	7	0	23	0	18	69.6	56.4	0.4
<b>Libya</b>											
1988	0	0.00	0	0	0	0	0	0	0.0	4.0	0.0
1989	0	0.00	0	0	0	0	0	0	0.0	4.1	0.0
1990	0	0.00	0	0	0	0	0	0	0.0	4.2	0.0
1991	0	0.00	0	0	0	0	0	0	0.0	4.4	0.0
1992	0	0.00	0	0	0	0	0	0	0.0	4.5	0.0
<b>Morocco</b>											
1988	26	0.15	4	113	0	116	8	114	3.4	24.5	4.7
1989	0	0.00	0	111	0	113	6	111	0.0	25.1	4.5
1990	22	0.18	4	67	0	69	8	67	5.8	25.6	2.7
1991	28	0.18	5	140	0	145	8	143	3.4	26.2	5.5
1992	33	0.18	6	115	0	121	8	119	5.0	26.7	4.5
<b>Tunisia</b>											
1988	0	0.00	0	82	0	82	10	82	0.0	7.8	10.6
1989	0	0.00	0	85	0	85	10	85	0.0	7.9	10.7
1990	0	0.00	0	48	0	48	10	48	0.0	8.1	5.9
1991	0	0.00	0	76	0	71	15	71	0.0	8.3	8.6
1992	0	0.00	0	90	0	95	10	95	0.0	8.4	11.2

1/ Production/consumption. A self-sufficiency ratio greater than 100 is due to stock changes.

2/ Bahrain, Kuwait, Oman, Qatar, United Arab Emirates.

Source: USDA Foreign Agricultural Service, Production, Supply and Utilization database, April 1993; Agricultural Attache, Oilseeds report, various issues.



Appendix table 26--Supply and use of vegetable oils in North Africa and the Middle East, 1988-92

Country and year	Area harvested	Extraction rate	Production	Imports	Exports	Consumption	Ending Stock	Feed	Self-sufficiency ratio 1/	Population	Per capita consumption
	1,000 tons	percent	-----1,000 tons-----						ratio	millions	kilograms
Middle East											
1988	2,781	0.31	859	1,771	138	2,403	210	2,274	35.7	178.4	13.5
1989	3,248	0.30	982	1,956	214	2,693	241	2,509	36.5	184.1	14.6
1990	3,078	0.32	975	1,995	206	2,705	300	2,492	36.0	189.7	14.3
1991	2,612	0.28	727	2,080	199	2,739	169	2,534	26.5	192.9	14.2
1992	3,055	0.31	954	2,247	219	2,931	220	2,714	32.5	199.4	14.7
Cyprus											
1988	0	0.00	1	13	5	9	0	9	11.1	0.7	12.9
1989	0	0.00	1	16	5	12	0	12	8.3	0.7	17.5
1990	0	0.00	1	16	5	12	0	12	8.3	0.7	17.3
1991	0	0.00	1	17	5	13	0	13	7.7	0.7	18.5
1992	0	0.00	1	17	5	13	0	13	7.7	0.7	18.3
Gulf States 2/											
1988	20	0.20	4	63	0	67	0	54	6.0	6.2	10.8
1989	20	0.20	4	77	0	81	0	66	4.9	6.5	12.4
1990	0	0.00	0	67	0	67	0	47	0.0	6.8	9.8
1991	20	0.20	4	85	0	89	0	69	4.5	5.8	15.4
1992	20	0.20	4	85	0	89	0	69	4.5	6.5	13.6
Iran											
1988	208	0.17	35	506	0	541	0	541	6.5	53.1	10.2
1989	201	0.17	34	611	0	645	0	645	5.3	55.0	11.7
1990	207	0.17	35	611	0	646	0	646	5.4	57.0	11.3
1991	201	0.17	34	503	0	537	0	537	6.3	59.1	9.1
1992	200	0.17	34	561	0	595	0	595	5.7	61.2	9.7
Iraq											
1988	0	0.00	0	158	0	158	0	153	0.0	17.1	9.2
1989	0	0.00	0	193	0	193	0	188	0.0	17.7	10.9
1990	0	0.00	0	35	0	35	0	35	0.0	18.4	1.9
1991	0	0.00	0	164	0	164	0	161	0.0	17.9	9.2
1992	0	0.00	0	214	0	214	0	211	0.0	18.5	11.6
Israel											
1988	390	0.21	82	22	0	105	16	76	78.1	4.1	25.7
1989	402	0.24	97	10	2	113	8	79	85.8	4.1	27.2
1990	426	0.28	118	27	0	137	16	81	86.1	4.3	31.8
1991	415	0.23	95	25	0	116	20	76	81.9	4.5	25.6
1992	487	0.22	108	16	0	122	22	79	88.5	4.7	25.7
Jordan											
1988	0	0.00	2	126	1	127	2	126	1.6	3.0	42.2
1989	0	0.00	10	134	1	138	7	137	7.2	3.1	44.0
1990	0	0.00	2	176	1	178	6	177	1.1	3.3	54.4
1991	0	0.00	2	177	1	178	6	177	1.1	3.4	52.2
1992	0	0.00	2	178	1	179	6	178	1.1	3.6	50.3
Lebanon											
1988	45	0.36	16	76	3	89	1	84	18.0	3.3	27.2
1989	52	0.31	16	71	3	84	1	78	19.0	3.3	25.4
1990	52	0.31	16	74	2	88	1	83	18.2	3.3	26.3
1991	53	0.30	16	73	2	87	1	85	18.4	3.4	25.7
1992	53	0.30	16	75	2	89	1	87	18.0	3.4	25.9
Saudi Arabia											
1988	0	0.00	0	167	1	166	0	146	0.0	15.3	10.8
1989	0	0.00	0	200	1	199	0	179	0.0	16.0	12.5
1990	0	0.00	0	206	1	205	0	185	0.0	16.3	12.6
1991	0	0.00	0	226	1	225	0	205	0.0	16.5	13.6
1992	0	0.00	0	236	1	235	0	215	0.0	17.1	13.8

Continued--

Appendix table 26--Supply and use of vegetable oils in North Africa and the Middle East, 1988-92--Continued

Country and year	Area harvested	Extraction rate	Production	Imports	Exports	Consumption	Ending Stock	Feed	Self-sufficiency ratio 1/	Population	Per capita consumption
	1,000 tons	percent	-----1,000 tons-----						ratio	millions	kilograms
<b>Syria</b>											
1988	290	0.45	131	9	0	101	40	96	129.7	11.8	8.6
1989	278	0.22	60	13	0	110	3	100	54.5	12.2	9.0
1990	277	0.44	122	23	0	124	24	114	98.4	12.7	9.7
1991	341	0.26	89	30	0	137	6	127	65.0	13.2	10.4
1992	350	0.40	139	40	0	149	36	139	93.3	13.7	10.9
<b>Turkey</b>											
1988	1,802	0.32	583	534	128	938	151	887	62.2	54.6	17.2
1989	2,269	0.33	755	526	202	1,008	222	915	74.9	55.9	18.0
1990	2,090	0.32	676	645	197	1,093	253	992	61.8	57.1	19.1
1991	1,554	0.31	482	660	190	1,069	136	960	45.1	58.4	18.3
1992	1,916	0.34	645	705	210	1,121	155	1,003	57.5	59.6	18.8
<b>Yemen</b>											
1988	26	0.19	5	97	0	102	0	102	4.9	9.2	11.1
1989	26	0.19	5	105	0	110	0	110	4.5	9.4	11.6
1990	26	0.19	5	115	0	120	0	120	4.2	9.7	12.3
1991	28	0.14	4	120	0	124	0	124	3.2	10.1	12.3
1992	29	0.17	5	120	0	125	0	125	4.0	10.4	12.0
<b>North Africa</b>											
1988	781	0.37	291	1,240	52	1,481	105	1,275	19.6	111.7	13.3
1989	745	0.49	365	1,338	85	1,616	107	1,365	22.6	114.4	14.1
1990	880	0.47	414	1,422	68	1,741	134	1,478	23.8	117.1	14.9
1991	804	0.44	355	1,507	72	1,809	115	1,545	19.6	119.9	15.1
1992	783	0.51	398	1,463	85	1,783	108	1,528	22.3	122.7	14.5
<b>Algeria</b>											
1988	0	0.00	13	291	0	301	3	294	4.3	24.1	12.5
1989	0	0.00	14	283	0	298	2	291	4.7	24.7	12.0
1990	0	0.00	14	304	0	318	2	311	4.4	25.4	12.5
1991	0	0.00	14	337	0	351	2	349	4.0	26.0	13.5
1992	0	0.00	14	325	0	339	2	336	4.1	26.7	12.7
<b>Egypt</b>											
1988	660	0.17	109	533	0	642	0	449	17.0	51.3	12.5
1989	625	0.16	102	673	0	775	0	537	13.2	52.5	14.7
1990	671	0.17	116	741	0	857	0	607	13.5	53.8	15.9
1991	603	0.17	102	734	0	836	0	580	12.2	55.1	15.2
1992	572	0.17	98	720	0	818	0	572	12.0	56.4	14.5
<b>Libya</b>											
1988	0	0.00	5	84	0	89	6	88	5.6	4.0	22.4
1989	0	0.00	5	94	0	99	6	98	5.1	4.1	24.2
1990	0	0.00	5	94	0	99	6	98	5.1	4.2	23.4
1991	0	0.00	5	95	0	100	6	99	5.0	4.4	23.0
1992	0	0.00	5	95	0	101	5	100	5.0	4.5	22.5
<b>Morocco</b>											
1988	121	0.57	69	208	0	274	23	269	25.2	24.5	11.2
1989	120	0.95	114	154	30	240	21	235	47.5	25.1	9.6
1990	209	0.55	114	182	3	291	23	286	39.2	25.6	11.4
1991	201	0.62	124	226	12	335	26	330	37.0	26.2	12.8
1992	211	0.57	121	193	5	312	23	307	38.8	26.7	11.7
<b>Tunisia</b>											
1988	0	0.08	95	124	52	175	73	175	54.3	7.8	22.5
1989	0	0.11	130	134	55	204	78	204	63.7	7.9	25.7
1990	0	0.14	165	101	65	176	103	176	93.8	8.1	21.7
1991	0	0.09	110	115	60	187	81	187	58.8	8.3	22.6
1992	0	0.13	160	130	80	213	78	213	75.1	8.4	25.2

1/ Production/consumption. A self-sufficiency ratio greater than 100 is due to stock changes.

2/ Bahrain, Kuwait, Oman, Qatar, United Arab Emirates.

Source: USDA Foreign Agricultural Service, Production, Supply and Utilization database, April 1993; Agricultural Attache, Oilseeds reports, various issues.



Appendix table 27--Supply and use of sugar in North Africa and the Middle East, 1988-92

Country and year	Production	Imports	Exports	Consumption	Ending Stocks	Self-sufficiency 1/ ratio	Population	Per capita consumption
	-----1,000 tons-----					percent	millions	kilograms
Middle East								
1989	2,083	2,927	1	5,270	917	39.5	184.1	28.6
1990	2,034	3,480	1	5,498	935	37.0	189.7	29.0
1991	2,701	3,299	14	5,663	1,298	47.7	192.9	29.4
1992	2,877	3,375	294	5,910	1,346	48.7	199.4	29.6
1993	3,089	3,301	400	6,150	1,186	50.2	206.0	29.9
Cyprus								
1989	0	20	0	20	0	0.0	0.7	29.1
1990	0	21	0	21	0	0.0	0.7	30.2
1991	0	27	0	21	6	0.0	0.7	29.9
1992	0	20	0	22	4	0.0	0.7	31.0
1993	0	22	0	22	4	0.0	0.7	30.7
Gulf States 2/								
1989	0	332	0	331	68	0.0	6.2	53.2
1990	0	328	0	337	59	0.0	6.5	51.7
1991	0	332	0	326	65	0.0	6.8	47.8
1992	0	372	0	357	80	0.0	5.8	61.9
1993	0	368	0	364	84	0.0	6.5	55.8
Iran								
1989	630	650	0	1,280	246	49.2	53.1	24.1
1990	600	774	0	1,400	220	42.9	55.0	25.4
1991	700	875	0	1,520	275	46.1	57.0	26.7
1992	750	825	0	1,550	300	48.4	59.1	26.2
1993	850	750	0	1,600	300	53.1	61.2	26.2
Iraq								
1989	7	653	0	660	136	1.1	17.1	38.6
1990	7	630	0	665	111	1.1	17.7	37.5
1991	8	202	0	321	0	2.5	18.4	17.4
1992	10	395	0	405	0	2.5	17.9	22.6
1993	12	500	0	512	0	2.3	18.5	27.7
Israel								
1989	0	250	0	250	82	0.0	4.1	61.1
1990	0	260	0	270	72	0.0	4.1	65.1
1991	0	280	0	280	72	0.0	4.3	65.1
1992	0	290	0	285	77	0.0	4.5	62.8
1993	0	288	0	290	75	0.0	4.7	61.1
Jordan								
1989	0	117	0	120	24	0.0	3.0	39.9
1990	0	113	0	126	11	0.0	3.1	40.1
1991	0	130	0	130	11	0.0	3.3	39.7
1992	0	119	0	120	10	0.0	3.4	35.2
1993	0	150	0	150	10	0.0	3.6	42.2
Lebanon								
1989	6	90	0	90	9	6.7	3.3	27.5
1990	6	85	0	90	10	6.7	3.3	27.3
1991	6	84	0	90	10	6.7	3.3	26.9
1992	6	99	0	100	15	6.0	3.4	29.5
1993	8	92	0	100	15	8.0	3.4	29.1
Saudi Arabia								
1989	0	410	0	405	60	0.0	15.3	26.4
1990	0	400	0	420	40	0.0	16.0	26.3
1991	0	430	0	430	40	0.0	16.3	26.4
1992	0	495	0	455	80	0.0	16.5	27.6
1993	0	435	0	435	80	0.0	17.1	25.5

Continued--

Appendix table 27--Supply and use of sugar in North Africa and the Middle East, 1988-92--Continued

Country and year	Production	Imports	Export	Consumption	Ending Stocks	Self-sufficiency 1/	Population	Per capita consumption
	-----1,000 tons-----					percent	millions	kilograms
<b>Syria</b>								
1989	30	405	0	435	67	6.9	11.8	36.9
1990	41	399	0	440	67	9.3	12.2	35.9
1991	43	382	0	445	47	9.7	12.7	35.0
1992	59	421	0	450	77	13.1	13.2	34.0
1993	99	359	0	455	80	21.8	13.7	33.1
<b>Turkey</b>								
1989	1,410	0	1	1,679	225	84.0	54.6	30.7
1990	1,380	470	1	1,729	345	79.8	55.9	30.9
1991	1,944	247	14	1,790	732	108.6	57.1	31.3
1992	2,052	17	294	1,844	663	111.3	58.4	31.6
1993	2,120	5	400	1,890	498	112.2	59.6	31.7
<b>Yemen</b>								
1989	0	0	0	0	0	ERR	9.2	0.0
1990	0	0	0	0	0	ERR	9.4	0.0
1991	0	310	0	310	40	0.0	9.7	31.8
1992	0	322	0	322	40	0.0	10.1	32.0
1993	0	332	0	332	40	0.0	10.4	31.9
<b>North Africa</b>								
1989	1,512	2,191	0	3,661	376	41.3	111.7	32.8
1990	1,496	2,101	0	3,467	506	43.1	114.4	30.3
1991	1,548	2,115	140	3,497	532	44.3	117.1	29.9
1992	1,506	2,253	100	3,609	582	41.7	119.9	30.1
1993	1,510	2,260	100	3,690	562	40.9	122.7	30.1
<b>Algeria</b>								
1989	10	820	0	830	109	1.2	24.1	34.4
1990	10	840	0	850	109	1.2	24.7	34.4
1991	10	990	140	860	109	1.2	25.4	33.9
1992	10	980	100	884	115	1.1	26.0	34.0
1993	10	980	100	890	115	1.1	26.7	33.4
<b>Egypt</b>								
1989	945	733	0	1,678	50	56.3	51.3	32.7
1990	957	595	0	1,452	150	65.9	52.5	27.6
1991	982	495	0	1,477	150	66.5	53.8	27.4
1992	950	580	0	1,500	180	63.3	55.1	27.2
1993	1,000	560	0	1,550	190	64.5	56.4	27.5
<b>Libya</b>								
1989	0	170	0	170	25	0.0	4.0	42.8
1990	0	200	0	180	45	0.0	4.1	44.0
1991	0	190	0	180	55	0.0	4.2	42.6
1992	0	200	0	200	55	0.0	4.4	45.9
1993	0	200	0	200	55	0.0	4.5	44.6
<b>Morocco</b>								
1989	527	283	0	783	136	67.3	24.5	31.9
1990	494	276	0	775	131	63.7	25.1	30.9
1991	519	250	0	760	140	68.3	25.6	29.7
1992	519	293	0	800	152	64.9	26.2	30.6
1993	460	330	0	820	122	56.1	26.7	30.7
<b>Tunisia</b>								
1989	30	185	0	200	56	15.0	7.8	25.8
1990	35	190	0	210	71	16.7	7.9	26.5
1991	37	190	0	220	78	16.8	8.1	27.1
1992	27	200	0	225	80	12.0	8.3	27.2
1993	40	190	0	230	80	17.4	8.4	27.2

1/ Production/consumption. A self-sufficiency ratio greater than 100 is due to stock changes.

2/ Bahrain, Kuwait, Oman, Qatar, United Arab Emirates.

Source: USDA Foreign Agricultural Service, Production, Supply and Utilization database, April 1993.



Appendix table 28--Supply and use of beef, veal and buffalo in North Africa and the Middle East, 1988-92

Country and year	Total slaughter	Production	Imports	Exports	Consumption	Ending Stocks	Self- suffi- ciency 1/	Population	Per capita consumption
	1,000 head	-----1,000 tons-----					ratio	millions	kilograms
Middle East									
1988	7,679	624	363	6	985	57	63.4	178.4	5.5
1989	7,747	669	270	12	943	42	70.9	184.1	5.1
1990	7,875	718	298	5	1,023	30	70.2	189.7	5.4
1991	7,584	729	282	24	976	41	74.7	192.9	5.1
1992	7,757	756	245	7	991	44	76.3	199.4	5.0
Cyprus									
1988	12	4	4	0	8	0	48.7	0.7	11.9
1989	13	4	6	0	10	0	40.7	0.7	14.1
1990	13	4	3	0	7	0	55.7	0.7	10.2
1991	15	5	4	0	8	0	58.9	0.7	12.0
1992	16	5	4	0	9	0	55.6	0.7	12.6
Gulf States 2/									
1988	58	10	43	2	51	0	19.7	6.2	8.2
1989	62	10	48	3	54	0	18.4	6.5	8.3
1990	70	10	38	3	46	0	21.9	6.8	6.7
1991	47	7	31	2	36	0	19.6	5.8	6.2
1992	49	7	41	0	48	0	14.6	6.5	7.4
Iran									
1988	2,000	180	95	0	275	0	65.6	53.1	5.2
1989	2,014	201	66	0	267	0	75.4	55.0	4.8
1990	2,019	230	125	0	355	0	64.8	57.0	6.2
1991	2,064	250	65	0	315	0	79.4	59.1	5.3
1992	2,094	270	70	0	340	0	79.4	61.2	5.6
Iraq									
1988	430	47	113	0	160	0	29.4	17.1	9.3
1989	440	48	78	0	126	0	38.0	17.7	7.1
1990	450	50	45	0	95	0	52.6	18.4	5.2
1991	350	39	17	0	56	0	69.3	17.9	3.1
1992	350	38	0	0	38	0	100.0	18.5	2.1
Israel									
1988	105	35	44	2	71	16	49.3	4.1	17.4
1989	105	39	38	7	73	13	53.4	4.1	17.6
1990	110	40	31	1	75	8	53.3	4.3	17.4
1991	107	42	43	1	81	11	51.9	4.5	17.8
1992	105	39	39	1	79	9	49.4	4.7	16.6
Jordan									
1988	16	1	16	0	17	0	5.8	3.0	5.7
1989	15	1	5	0	6	0	15.6	3.1	2.0
1990	16	1	11	1	12	0	8.6	3.3	3.5
1991	16	1	29	19	11	0	9.4	3.4	3.1
1992	16	1	15	5	11	0	9.1	3.6	3.1
Lebanon									
1988	105	14	8	0	22	0	63.6	3.3	6.7
1989	108	15	5	0	20	0	74.1	3.3	6.1
1990	110	15	5	0	20	0	75.0	3.3	6.0
1991	108	15	5	0	20	0	76.9	3.4	5.8
1992	110	15	5	0	20	0	75.0	3.4	5.8
Saudi Arabia									
1988	135	24	26	1	49	21	49.0	15.3	3.2
1989	120	25	15	0	47	14	53.2	16.0	2.9
1990	118	28	27	0	62	7	45.2	16.3	3.8
1991	129	27	61	1	84	10	32.1	16.5	5.1
1992	132	28	48	1	75	12	37.3	17.1	4.4

Continued--

Appendix table 28--Supply and use of beef, veal and buffalo in North Africa and the Middle East, 1988-92--Cont

Country and year	Total slaughter	Production	Imports	Exports	Consumption	Ending Stocks	Self-sufficiency 1/	Population	Per capita consumption
	1,000 head	-----1,000 tons-----					ratio	millions	kilograms
Syria									
1988	268	29	0	0	29	0	100.0	11.8	2.5
1989	260	29	0	0	29	0	100.0	12.2	2.4
1990	249	27	0	0	27	0	100.0	12.7	2.1
1991	218	24	0	0	24	0	100.0	13.2	1.8
1992	255	29	0	0	29	0	100.0	13.7	2.1
Turkey									
1988	4,350	255	12	1	276	20	92.4	54.6	5.1
1989	4,400	270	7	1	281	15	96.1	55.9	5.0
1990	4,500	285	10	1	294	15	96.9	57.1	5.1
1991	4,300	290	25	0	310	20	93.5	58.4	5.3
1992	4,400	295	20	0	312	23	94.6	59.6	5.2
Yemen									
1988	200	25	2	0	27	0	92.4	9.2	3.0
1989	210	27	2	0	29	0	92.8	9.4	3.1
1990	220	28	2	0	30	0	92.1	9.7	3.1
1991	230	29	3	0	32	0	92.1	10.1	3.1
1992	230	29	3	0	32	0	90.6	10.4	3.1
North Africa									
1988	3,433	631	185	0	816	0	77.4	111.7	7.3
1989	3,512	652	206	0	858	0	75.9	114.4	7.5
1990	3,711	697	150	0	847	0	82.3	117.1	7.2
1991	3,820	730	117	1	846	0	86.3	119.9	7.1
1992	3,766	717	153	2	872	0	82.3	122.7	7.1
Algeria									
1988	370	81	13	0	94	0	86.2	24.1	3.9
1989	365	85	0	0	85	0	99.4	24.7	3.5
1990	350	89	8	0	97	0	91.4	25.4	3.8
1991	360	94	13	0	107	0	87.9	26.0	4.1
1992	363	95	13	0	108	0	88.0	26.7	4.0
Egypt									
1988	2,055	381	150	0	531	0	71.8	51.3	10.4
1989	2,057	386	181	0	567	0	68.1	52.5	10.8
1990	2,187	408	120	0	528	0	77.3	53.8	9.8
1991	2,244	426	85	1	510	0	83.5	55.1	9.3
1992	2,233	424	120	2	546	0	77.7	56.4	9.7
Libya									
1988	95	19	7	0	26	0	73.1	4.0	6.5
1989	90	18	7	0	25	0	72.0	4.1	6.1
1990	95	19	4	0	23	0	82.6	4.2	5.4
1991	115	23	2	0	25	0	92.0	4.4	5.7
1992	120	24	2	0	26	0	92.3	4.5	5.8
Morocco									
1988	727	116	5	0	121	0	96.2	24.5	4.9
1989	804	129	6	0	135	0	95.3	25.1	5.4
1990	892	147	4	0	151	0	97.5	25.6	5.9
1991	910	151	4	0	155	0	97.1	26.2	5.9
1992	850	137	5	0	142	0	96.6	26.7	5.3
Tunisia									
1988	186	34	10	0	44	0	77.1	7.8	5.7
1989	196	34	12	0	46	0	74.4	7.9	5.8
1990	187	34	14	0	48	0	71.3	8.1	5.9
1991	191	36	13	0	49	0	73.6	8.3	5.9
1992	200	37	13	0	50	0	74.4	8.4	5.9

1/ Production/consumption. A self-sufficiency ratio greater than 100 is due to stock changes.

2/ Bahrain, Kuwait, Oman, Qatar, United Arab Emirates.

Source: USDA Foreign Agricultural Service, PS&amp;D database; USDA, FAS, Dairy, Livestock and Poultry: World Livestock Situation, Circular Series: FL&amp;P 2-93, April 1993, FAO Agrostat database.



Appendix table 29--Supply and use of lamb, mutton, and goat in North Africa and the Middle East, 1988-92

Country and year	Total slaughter	Production	Imports	Exports	Consumption	Ending stocks	Self-sufficiency ratio 1/	Population	Per capita consumption
	1,000 head	-----1,000 tons-----					percent	millions	kilograms
Middle East									
1988	74,564	1,084	158	24	1,219	48	88.9	178.4	6.8
1989	75,812	1,099	152	16	1,243	40	88.4	184.1	6.8
1990	76,431	1,102	97	7	1,198	34	92.0	189.7	6.3
1991	74,340	1,250	162	5	1,404	37	89.0	192.9	7.3
1992	75,641	1,271	166	6	1,433	35	88.7	199.4	7.2
Cyprus									
1988	452	9	1	0	10	0	91.1	0.7	14.4
1989	374	8	1	0	9	0	85.2	0.7	13.5
1990	385	8	1	0	9	0	93.2	0.7	12.2
1991	310	6	1	0	7	0	88.0	0.7	9.6
1992	315	8	1	0	9	0	88.9	0.7	12.6
Gulf States 2/									
1988	4,289	76	46	0	122	0	62.3	6.2	19.6
1989	4,451	81	46	0	127	0	63.6	6.5	19.5
1990	3,919	72	39	0	111	0	64.6	6.8	16.3
1991	1,638	33	38	0	71	0	46.6	5.8	12.3
1992	1,814	36	44	0	80	0	45.0	6.5	12.3
Iran									
1988	19,800	304	0	0	346	0	88.0	53.1	6.5
1989	20,570	315	0	0	364	0	86.6	55.0	6.6
1990	21,500	331	0	0	346	0	95.7	57.0	6.1
1991	22,150	340	0	0	403	0	84.4	59.1	6.8
1992	22,750	350	0	0	415	0	84.3	61.2	6.8
Iraq									
1988	1,855	28	13	0	41	0	68.3	17.1	2.4
1989	1,910	31	16	0	47	0	66.6	17.7	2.6
1990	1,960	32	8	0	40	0	81.0	18.4	2.1
1991	1,500	25	2	0	27	0	92.6	17.9	1.5
1992	1,830	30	0	0	30	0	100.0	18.5	1.6
Israel									
1988	240	9	0	0	9	0	100.0	4.1	2.2
1989	230	8	0	0	8	0	100.0	4.1	1.9
1990	250	6	0	0	6	0	100.0	4.3	1.4
1991	260	6	0	0	6	0	100.0	4.5	1.3
1992	260	6	0	0	6	0	100.0	4.7	1.3
Jordan									
1988	424	7	33	0	40	0	17.5	3.0	13.3
1989	495	8	21	0	29	0	27.2	3.1	9.4
1990	497	8	9	0	17	0	47.4	3.3	5.2
1991	525	9	14	0	23	0	38.5	3.4	6.9
1992	555	9	15	0	24	0	37.5	3.6	6.7
Lebanon									
1988	740	15	0	0	15	0	97.4	3.3	4.7
1989	750	15	0	0	15	0	97.7	3.3	4.6
1990	758	15	0	0	15	0	97.4	3.3	4.6
1991	677	14	0	0	14	0	96.9	3.4	4.3
1992	685	14	0	0	14	0	100.0	3.4	4.1
Saudi Arabia									
1988	9,312	96	17	4	110	0	87.3	15.3	7.2
1989	9,650	95	16	0	109	0	87.2	16.0	6.8
1990	9,685	96	23	0	120	0	80.0	16.3	7.4
1991	9,835	284	41	1	324	0	87.7	16.5	19.6
1992	9,845	285	38	2	325	0	87.7	17.1	19.1

Continued--

Appendix table 29--Supply and use of lamb, mutton, and goat in North Africa and the Middle East, 1988-92--Continued

Country and year	Total slaughter	Production	Imports	Exports	Consumption	Ending Stocks	Self-sufficiency ratio 1/	Population	Per capita consumption
	1,000 head	-----1,000 tons-----					percent	millions	kilograms
Syria									
1988	4,875	96	4	0	100	0	95.6	11.8	8.5
1989	4,902	97	1	0	98	0	99.3	12.2	8.0
1990	4,892	96	1	0	97	0	99.3	12.7	7.6
1991	4,915	97	1	0	98	0	99.3	13.2	7.4
1992	4,970	97	1	0	98	0	99.0	13.7	7.1
Turkey									
1988	28,700	380	0	20	360	45	105.6	54.6	6.6
1989	28,500	375	0	16	369	35	101.6	55.9	6.6
1990	28,500	370	0	7	368	30	100.5	57.1	6.4
1991	28,300	367	0	4	360	33	101.9	58.4	6.2
1992	28,300	365	0	4	371	31	98.4	59.6	6.2
Yemen									
1988	3,877	64	2	0	66	0	97.2	9.2	7.2
1989	3,980	66	2	0	68	0	97.7	9.4	7.1
1990	4,085	68	2	0	70	0	97.1	9.7	7.2
1991	4,230	69	2	0	71	0	97.2	10.1	7.1
1992	4,317	71	2	0	73	0	97.5	10.4	7.0
North Africa									
1988	21,262	365	19	0	384	0	95.0	111.7	3.4
1989	21,346	356	19	0	375	0	94.8	114.4	3.3
1990	24,794	401	12	0	413	0	97.2	117.1	3.5
1991	25,907	428	9	0	437	0	97.8	119.9	3.6
1992	26,175	440	9	0	449	0	98.0	122.7	3.7
Algeria									
1988	5,025	126	14	0	140	0	90.0	24.1	5.8
1989	4,275	106	13	0	119	0	89.1	24.7	4.8
1990	7,789	144	6	0	150	0	95.9	25.4	5.9
1991	8,189	154	9	0	163	0	94.4	26.0	6.3
1992	8,240	155	9	0	164	0	94.5	26.7	6.1
Egypt									
1988	3,577	78	4	0	82	0	95.1	51.3	1.6
1989	3,648	78	5	0	83	0	94.0	52.5	1.6
1990	3,719	81	4	0	85	0	95.3	53.8	1.6
1991	3,760	82	0	0	82	0	100.0	55.1	1.5
1992	3,780	83	0	0	83	0	100.0	56.4	1.5
Libya									
1988	3,700	55	1	0	56	0	98.7	4.0	14.0
1989	4,200	63	1	0	64	0	98.7	4.1	15.6
1990	3,900	59	1	0	60	0	98.0	4.2	14.3
1991	4,500	68	0	0	68	0	100.0	4.4	15.6
1992	4,580	71	0	0	71	0	100.0	4.5	15.8
Morocco									
1988	5,107	67	0	0	67	0	100.0	24.5	2.7
1989	5,397	70	0	0	70	0	100.0	25.1	2.8
1990	5,472	77	0	0	77	0	100.0	25.6	3.0
1991	5,472	84	0	0	84	0	100.0	26.2	3.2
1992	5,505	86	0	0	86	0	100.0	26.7	3.2
Tunisia									
1988	3,853	39	0	0	39	0	98.9	7.8	5.1
1989	3,826	39	1	0	40	0	98.3	7.9	5.0
1990	3,914	40	0	0	40	0	99.1	8.1	5.0
1991	3,986	40	0	0	40	0	99.2	8.3	4.9
1992	4,070	45	0	0	45	0	100.0	8.4	5.3

1/ Production/consumption. A self-sufficiency ratio greater than 100 is due to stock changes.

2/ Bahrain, Kuwait, Oman, Qatar, United Arab Emirates.

Source: USDA, Foreign Agricultural Service, PS&amp;D database, USDA, FAS, Dairy, Livestock and Poultry: World Livestock Situation, Circular Series: FL&amp;P 2-93, April 1993; FAO Agrost database.



Appendix table 30--Supply and use of poultry meat in North Africa and the Middle East, 1988-92

Country and year	Production	Imports	Exports	Consumption	Ending Stocks	Self-sufficiency ratio 1/	Population	Per capita consumption
	-----1,000 tons-----					percent	millions	kilograms
Middle East								
1988	1,507	373	32	1,893	42	79.6	178.4	10.6
1989	1,480	344	25	1,795	63	82.5	184.1	9.7
1990	1,520	339	22	1,813	87	83.8	189.7	9.6
1991	1,482	386	18	1,823	113	81.3	192.9	9.4
1992	1,663	405	19	2,047	115	81.2	199.4	10.3
Cyprus								
1988	17	0	0	17	0	100.0	0.7	24.7
1989	20	0	0	20	0	100.0	0.7	28.8
1990	20	0	0	20	0	100.0	0.7	28.5
1991	21	0	0	21	0	100.0	0.7	29.6
1992	22	0	0	22	0	100.0	0.7	30.7
Gulf States 2/								
1988	40	110	1	151	5	26.5	6.2	24.3
1989	43	119	1	159	5	27.0	6.5	24.4
1990	41	93	1	133	5	30.8	6.8	19.5
1991	25	103	0	126	5	19.8	5.8	21.9
1992	35	117	0	152	5	23.0	6.5	23.3
Iran								
1988	266	45	0	311	0	85.5	53.1	5.9
1989	284	0	0	284	0	100.0	55.0	5.2
1990	305	0	0	305	0	100.0	57.0	5.4
1991	361	0	0	361	0	100.0	59.1	6.1
1992	430	8	0	438	0	98.2	61.2	7.2
Iraq								
1988	235	7	0	270	15	87.0	17.1	15.8
1989	225	5	0	240	5	93.8	17.7	13.5
1990	200	6	0	206	5	97.1	18.4	11.2
1991	60	1	0	61	5	98.4	17.9	3.4
1992	80	1	0	81	5	98.8	18.5	4.4
Israel								
1988	178	0	20	158	1	112.7	4.1	38.6
1989	171	0	18	144	10	118.8	4.1	34.7
1990	173	0	19	159	5	108.8	4.3	37.0
1991	188	0	15	175	3	107.4	4.5	38.6
1992	193	0	14	180	2	107.2	4.7	37.9
Jordan								
1988	68	3	0	60	11	113.6	3.0	19.9
1989	43	15	0	60	9	71.7	3.1	19.1
1990	50	16	0	65	10	77.0	3.3	19.8
1991	60	22	0	78	14	77.4	3.4	22.7
1992	70	13	0	84	13	83.3	3.6	23.6
Lebanon								
1988	60	4	0	64	0	94.5	3.3	19.4
1989	55	3	0	58	0	94.5	3.3	17.6
1990	50	4	0	54	0	92.3	3.3	16.2
1991	53	4	0	57	0	92.7	3.4	16.9
1992	55	4	0	59	0	92.9	3.4	17.2
Saudi Arabia								
1988	248	194	3	467	12	53.1	15.3	30.5
1989	240	194	2	424	20	56.6	16.0	26.5
1990	265	209	1	445	48	59.6	16.3	27.3
1991	285	245	2	506	70	56.3	16.5	30.7
1992	303	250	4	546	73	55.5	17.1	32.0

Continued--

Appendix table 30--Supply and use of poultry meat in North Africa and the Middle East, 1988-92--Continued

Country and year	Production	Imports	Exports	Consumption	Ending Stocks	Self-sufficiency ratio 1/	Population	Per capita consumption
	-----1,000 tons-----					percent	millions	kilograms
Syria								
1988	80	0	0	80	0	100.0	11.8	6.8
1989	85	0	0	85	0	100.0	12.2	6.9
1990	90	0	0	90	0	100.0	12.7	7.1
1991	90	0	0	90	0	100.0	13.2	6.8
1992	90	0	0	90	0	100.0	13.7	6.6
Turkey								
1988	236	0	8	228	15	103.5	54.6	4.2
1989	254	0	2	252	15	100.8	55.9	4.5
1990	269	0	1	268	15	100.4	57.1	4.7
1991	284	2	1	283	16	100.4	58.4	4.8
1992	330	0	3	330	15	100.0	59.6	5.5
Yemen								
1988	77	11	0	88	0	87.3	9.2	9.6
1989	60	8	0	68	0	87.7	9.4	7.2
1990	57	11	0	68	0	83.8	9.7	7.0
1991	55	10	0	65	0	84.6	10.1	6.5
1992	55	10	0	65	0	84.9	10.4	6.2
North Africa								
1988	742	25	0	777	5	95.5	111.7	7.0
1989	743	25	0	768	5	96.7	114.4	6.7
1990	740	2	0	742	5	99.7	117.1	6.3
1991	738	2	0	740	5	99.7	119.9	6.2
1992	736	2	0	738	5	99.7	122.7	6.0
Algeria								
1988	240	0	0	240	5	100.0	24.1	10.0
1989	260	0	0	260	5	100.0	24.7	10.5
1990	265	0	0	265	5	100.0	25.4	10.4
1991	260	0	0	260	5	100.0	26.0	10.0
1992	265	0	0	265	5	100.0	26.7	9.9
Egypt								
1988	279	25	0	314	0	88.9	51.3	6.1
1989	254	25	0	279	0	91.0	52.5	5.3
1990	235	2	0	237	0	99.2	53.8	4.4
1991	225	2	0	227	0	99.1	55.1	4.1
1992	210	2	0	212	0	99.1	56.4	3.8
Libya								
1988	53	0	0	53	0	100.0	4.0	13.3
1989	59	0	0	59	0	100.0	4.1	14.4
1990	68	0	0	68	0	100.0	4.2	16.1
1991	70	0	0	70	0	100.0	4.4	16.1
1992	74	0	0	74	0	100.0	4.5	16.5
Morocco								
1988	125	0	0	125	0	100.0	24.5	0.0
1989	122	0	0	122	0	100.0	25.1	0.0
1990	125	0	0	125	0	100.0	25.6	0.0
1991	130	0	0	130	0	100.0	26.2	0.0
1992	134	0	0	134	0	100.0	26.7	5.0
Tunisia								
1988	45	0	0	45	0	100.0	7.8	5.8
1989	48	0	0	48	0	100.0	7.9	6.1
1990	47	0	0	47	0	100.0	8.1	5.8
1991	53	0	0	53	0	100.0	8.3	6.4
1992	53	0	0	53	0	100.0	8.4	6.3

1/ Production/consumption. A self-sufficiency ratio greater than 100 is due to stock changes.

2/ Bahrain, Kuwait, Oman, Qatar, United Arab Emirates.

Sources: USDA Foreign Agricultural Service, Production, Supply and Utilization database, April 1993; USDA Foreign Agricultural Service, Dairy, Livestock and Poultry: World Poultry Situation, Circular Series FL&P 1-93, January 1993.



Appendix table 31--Milk Indicators in North Africa and the Middle East: 1988-92

Region/country year	Milk Production	Imports					Non-food use 2/	Self- suffic- iency ratio 3/	Population	Total per capita consump- tion
		Fresh	Dry	Concentrate	Total 1/	Exports				
		-----1,000 tons-----						percent	millions	kilograms
Middle East										
1988	11,677	23	301	103	3476	14	2926	77	178.0	68.6
1989	11,775	20	230	99	2704	15	2850	81	183.7	63.2
1990	11,847	22	236	95	2756	19	2839	81	189.3	62.0
1991	11,812	25	218	102	2582	23	2874	82	192.5	59.7
1992	11,848	25	239	112	2829	2	2862	81	198.9	59.4
Cyprus										
1988	123	0	1	3	18	0	0	87	0.7	204.9
1989	132	0	1	3	16	0	0	89	0.7	212.8
1990	142	0	1	2	17	0	0	89	0.7	226.2
1991	146	0	1	3	14	0	0	91	0.7	225.9
1992	153	0	1	3	16	0	0	90	0.7	236.2
Gulf States 4/										
1988	4842	4	28	18	337	0	1667	209	59.5	382.3
1989	4806	5	28	18	343	0	1708	209	60.8	391.5
1990	4664	5	23	3	262	0	1687	183	60.6	234.1
1991	4680	8	19	3	223	0	1667	190	61.8	243.0
1992	4578	9	26	8	308	0	1656	213	63.6	424.4
Iran										
1988	2,989	0	24	0	256	2	724	92	53.1	47.0
1989	3,148	0	7	0	75	0	750	98	55.0	44.7
1990	3,197	0	0	0	0	0	762	100	57.0	42.7
1991	3,228	0	0	0	1	0	762	100	59.1	41.8
1992	3,249	0	0	0	0	0	758	100	61.2	40.6
Iraq										
1988	563	0	57	0	614	0	82	48	17.1	62.5
1989	570	0	31	0	337	0	107	63	17.7	46.4
1990	576	0	34	0	366	0	84	61	18.4	47.4
1991	449	0	9	0	97	0	67	82	17.9	27.9
1992	532	0	9	0	97	0	46	85	18.5	31.7
Israel										
1988	1,000	0	5	0	55	2	681	95	4.1	83.1
1989	976	0	3	0	30	0	713	97	4.1	75.4
1990	985	0	5	0	49	1	693	95	4.3	77.0
1991	1,031	0	8	0	87	4	702	93	4.5	84.4
1992	1,030	0	8	0	86	2	730	92	4.7	76.3
Jordan										
1988	62	2	14	0	154	0	4	29	3.0	70.7
1989	69	1	10	0	108	0	3	39	3.1	55.2
1990	72	0	14	0	156	0	3	32	3.3	68.1
1991	77	1	15	1	168	0	5	31	3.4	70.2
1992	78	1	18	1	197	0	5	28	3.6	75.6
Lebanon										
1988	92	1	10	0	109	0	17	46	3.3	57.1
1989	96	0	12	0	130	0	14	42	3.3	63.8
1990	128	1	10	0	109	0	16	54	3.3	66.0
1991	172	1	10	1	110	0	16	61	3.4	77.3
1992	176	1	11	1	118	0	20	60	3.4	79.3
Saudi Arabia										
1988	361	9	88	43	1043	8	25	26	15.3	89.9
1989	369	2	77	45	926	14	18	29	16.0	78.6
1990	373	1	82	46	978	16	26	28	16.3	80.2
1991	377	2	95	50	1128	16	30	25	16.5	88.3
1992	382	2	100	55	1192	0	31	24	17.1	90.6

Continued--

Appendix table 31--Milk Indicators in North Africa and the Middle East: 1988-92-Continued

Region/country year	Milk Production	Imports					Non-food use 2/	Self- suffic- iency ratio 3/	Population	Total per capita consump- tion
		Fresh	Dry	Concentrate	Total 1/	Exports				
		-----1,000 tons-----						percent	millions	kilograms
Syria										
1988	1,317	0	2	0	26	2	233	98	11.8	90.5
1989	1,277	0	3	0	34	2	273	98	12.2	89.0
1990	1,332	0	4	0	42	2	220	97	12.7	90.5
1991	1,358	0	5	0	58	2	219	96	13.2	88.0
1992	1,384	0	5	0	54	0	251	96	13.7	86.9
Turkey										
1988	4,656	0	5	0	54	0	1651	99	54.3	55.6
1989	4,610	0	3	0	35	0	1694	99	55.5	53.6
1990	4,517	2	10	0	113	0	1671	98	56.7	52.5
1991	4,489	3	6	0	70	0	1651	98	57.9	50.5
1992	4,364	3	8	0	89	0	1635	98	59.2	48.4
Yemen										
1988	318	0	36	0	389	0	10	45	9.2	76.1
1989	319	0	28	0	301	0	10	51	9.4	64.6
1990	321	0	30	0	323	0	10	50	9.7	65.0
1991	324	0	26	0	280	0	10	54	10.1	59.1
1992	326	0	27	0	290	0	9	53	10.4	58.3
North Africa										
1988	4,585	30	228	63	2616	0	1657	64	111.7	48.7
1989	4,706	25	265	49	2975	0	1757	61	114.4	51.3
1990	4,818	20	215	44	2425	0	1812	67	117.1	46.1
1991	4,789	17	273	44	3047	0	1844	61	119.9	49.5
1992	4,749	15	281	44	3128	0	1908	60	122.7	49.4
Algeria										
1988	922	0	160	16	1754	0	167	34	24.1	103.5
1989	917	0	203	2	2187	0	180	30	24.7	117.9
1990	977	0	162	2	1749	0	188	36	25.4	99.8
1991	996	0	213	2	2294	0	192	30	26.0	118.6
1992	1,015	0	220	2	2369	0	205	30	26.7	119.4
Egypt										
1988	2,175	30	21	0	255	0	1461	90	51.3	17.2
1989	2,185	25	16	0	193	0	1547	92	52.5	14.9
1990	2,184	20	15	0	179	0	1594	92	53.8	13.8
1991	2,130	17	25	1	288	0	1621	88	55.1	13.5
1992	2,047	15	27	0	305	0	1675	87	56.4	13.6
Libya										
1988	153	0	8	41	172	0	5	47	4.0	80.4
1989	169	0	11	41	204	0	5	45	4.1	89.7
1990	190	0	7	36	151	0	6	56	4.2	79.3
1991	211	0	7	35	146	0	6	59	4.4	80.8
1992	222	0	7	36	150	0	6	60	4.5	81.7
Morocco										
1988	951	0	11	4	126	0	3	88	24.5	43.8
1989	1,028	0	8	4	99	0	2	91	25.1	44.9
1990	1,041	0	11	4	130	0	2	89	25.6	45.6
1991	1,030	0	12	4	133	0	2	89	26.2	44.4
1992	1,040	0	12	4	137		2	88	26.7	44.0
Tunisia										
1988	384	0	28	3	310	0	22	55	7.8	86.6
1989	407	0	27	2	292	0	22	58	7.9	85.4
1990	426	0	20	2	217	0	22	66	8.1	76.5
1991	422	0	17	2	187	0	23	69	8.3	71.2
1992	425	0	15	2	165	0	20	72	8.4	67.5

1/ Skim solids basis; 1992 - ERS estimate.

2/ Includes feed, industrial use and waste.

3/ Production/consumption - A self-sufficiency ratio greater than 100 is due to stock changes.

4/ Includes Bahrain, Kuwait, Oman, Qatar, United Arab Emirates.

Sources: USDA, FAS, PS&amp;D database, April 1993; FAO, Agrostat database.



Appendix table 32--Butter Indicators in North Africa and the Middle East: 1988-92

Region/country year	Production	Imports	Exports	Consump- tion	Self- suffic- iency ratio	Population	Total per capita consump- tion
	-----1,000 tons-----				percent	millions	kilograms
Middle East							
1988	214	89	2	302	71	178.0	1.70
1989	215	108	4	319	68	183.7	1.74
1990	213	100	3	310	69	189.3	1.64
1991	214	108	11	311	69	192.5	1.61
1992	212	108	4	316	67	198.9	1.59
Cyprus							
1988	0	1	0	1	0	0.7	1.12
1989	0	1	0	1	0	0.7	0.78
1990	0	1	0	1	0	0.7	0.94
1991	0	1	0	1	0	0.7	0.91
1992	0	1	0	1	0	0.7	1.40
Gulf States 2/							
1988	0	14	1	14	3	6.2	12.39
1989	0	15	1	14	3	6.5	11.98
1990	0	14	1	14	3	6.8	11.05
1991	0	18	1	17	3	5.7	16.04
1992	0	17	1	16	3	6.5	14.41
Iran							
1988	62	9	0	71	87	53.1	1.34
1989	65	34	0	99	66	55.0	1.80
1990	66	25	0	91	73	57.0	1.60
1991	67	28	0	95	71	59.1	1.61
1992	68	30	0	98	69	61.2	1.60
Iraq							
1988	8	7	0	14	55	17.1	0.84
1989	8	9	0	17	47	17.7	0.95
1990	8	4	0	12	68	18.4	0.63
1991	6	6	0	12	53	17.9	0.66
1992	7	6	0	13	55	18.5	0.73
Israel							
1988	4	0	1	4	109	4.1	0.91
1989	6	0	2	3	170	4.1	0.83
1990	7	0	2	6	129	4.3	1.28
1991	7	0	3	5	142	4.5	1.10
1992	7	0	3	4	173	4.7	0.86
Jordan							
1988	0	16	0	16	0	3.0	5.31
1989	0	14	0	14	0	3.1	4.50
1990	0	14	0	14	0	3.3	4.30
1991	0	17	8	9	0	3.4	2.73
1992	0	15	0	15	0	3.6	4.22
Lebanon							
1988	0	5	0	5	0	3.3	1.44
1989	0	5	0	5	0	3.3	1.36
1990	0	4	0	4	0	3.3	1.17
1991	0	4	0	4	0	3.4	1.24
1992	0	4	0	4	0	3.4	1.16
Saudi Arabia							
1988	1	28	0	29	3	15.3	1.87
1989	1	24	0	25	4	16.0	1.58
1990	1	28	0	29	3	16.3	1.78
1991	1	29	0	30	3	16.5	1.83
1992	1	30	0	31	3	17.1	1.81
Syria							
1988	17	7	0	23	71	11.8	1.98
1989	13	1	0	14	93	12.2	1.13
1990	12	2	0	15	86	12.7	1.14
1991	13	3	0	16	82	13.2	1.20
1992	13	3	0	16	82	13.7	1.19

Appendix table 32--Butter Indicators in North Africa and the Middle East:  
1988-92--Continued

Region/country year	Production	Imports	Exports	Consump- tion	Self- suffic- iency ratio	Population	Total per capita consump- tion
	-----1,000 tons-----				percent	millions	kilograms
Turkey							
1988	118	1	0	119	100	54.3	2.18
1989	117	2	0	120	98	55.5	2.16
1990	113	6	0	119	95	56.7	2.10
1991	114	0	0	114	100	57.9	1.97
1992	111	0	0	111	100	59.2	1.87
UAE							
1988	0	6	1	6	3	2.0	2.80
1989	0	7	1	6	3	2.1	3.02
1990	0	8	1	7	3	2.3	3.13
1991	0	8	1	7	3	2.4	3.08
1992	0	8	1	7	3	2.5	2.86
Yemen							
1988	4	3	0	7	65	9.2	0.76
1989	4	3	0	8	59	9.4	0.81
1990	5	2	0	7	67	9.7	0.69
1991	5	2	0	7	67	10.1	0.68
1992	5	2	0	7	70	10.4	0.64
North Africa							
1988	17	147	0	164	10	111.7	1.47
1989	20	147	0	166	12	114.4	1.45
1990	21	166	0	187	11	117.1	1.59
1991	21	122	0	143	15	119.9	1.19
1992	22	120	0	142	16	122.7	1.16
Algeria							
1988	1	45	0	46	2	24.1	1.91
1989	1	42	0	43	2	24.7	1.74
1990	1	51	0	52	2	25.4	2.05
1991	1	52	0	53	2	26.0	2.04
1992	1	53	0	54	2	26.7	2.02
Egypt							
1988	0	66	0	66	0	51.3	1.29
1989	2	75	0	77	3	52.5	1.46
1990	3	80	0	83	4	53.8	1.54
1991	3	35	0	38	8	55.1	0.69
1992	4	30	0	34	12	56.4	0.60
Libya							
1988	0	5	0	5	0	4.0	1.23
1989	0	7	0	7	0	4.1	1.71
1990	0	7	0	7	0	4.2	1.73
1991	0	7	0	7	0	4.4	1.54
1992	0	7	0	7	0	4.5	1.56
Morocco							
1988	14	22	0	36	39	24.5	1.45
1989	15	20	0	35	43	25.1	1.42
1990	15	21	0	36	42	25.6	1.42
1991	15	25	0	40	38	26.2	1.54
1992	15	26	0	41	37	26.7	1.55
Tunisia							
1988	2	10	0	11	14	7.8	1.47
1989	2	2	0	4	43	7.9	0.49
1990	2	6	0	8	21	8.1	1.00
1991	2	3	0	5	34	8.3	0.61
1992	2	4	0	6	30	8.4	0.68

1/ Production/consumption - A self-sufficiency ratio greater than 100 is due to stock changes.

2/ Includes Bahrain, Kuwait, Oman, Qatar, United Arab Emirates.

Sources: USDA, FAS, PS&D database, April 1193; FAO Agrostat database.



Appendix table 33--Cheese indicators in North Africa and the Middle East: 1988-92

Region/country year	Production	Ending Stocks	Imports	Exports	Consumption	Self- suffic- iency ratio 1/	Population	Total per capita consump- tion
	-----1,000 tons-----					percent	millions	kilograms
Middle East								
1988	467	4	187	7	652	72	178.0	3.66
1989	477	3	190	7	663	72	183.7	3.61
1990	479	3	199	7	675	71	189.3	3.56
1991	482	4	196	6	676	71	192.5	3.51
1992	489	4	203	4	692	71	198.9	3.48
Cyprus								
1988	8	0	3	0	10	74	0.7	14.79
1989	7	0	3	0	10	72	0.7	14.72
1990	8	0	3	0	10	74	0.7	14.51
1991	8	0	2	0	10	76	0.7	14.33
1992	8	0	2	0	10	80	0.7	13.68
Gulf States 2/								
1988	146	0	14	4	157	93	59	13.78
1989	147	0	35	3	179	82	61	19.80
1990	149	0	20	3	166	90	62	15.83
1991	154	0	19	2	171	90	63	16.05
1992	155	0	19	2	172	90	65	15.05
Iran								
1988	172	0	68	0	240	72	53.1	4.52
1989	181	0	69	0	250	72	55.0	4.55
1990	183	0	82	0	265	69	57.0	4.65
1991	184	0	93	0	277	66	59.1	4.69
1992	185	0	95	0	280	66	61.2	4.57
Iraq								
1988	33	0	19	0	52	64	17.1	3.04
1989	34	0	2	0	36	94	17.7	2.03
1990	34	0	10	0	44	77	18.4	2.41
1991	27	0	1	0	28	98	17.9	1.55
1992	31	0	0	0	31	100	18.5	1.70
Israel								
1988	17	4	0	1	20	86	4.1	4.84
1989	16	3	0	2	17	92	4.1	4.18
1990	16	3	0	1	18	90	4.3	4.15
1991	17	4	0	2	20	86	4.5	4.34
1992	17	4	0	1	20	85	4.7	4.21
Jordan								
1988	2	0	5	1	7	35	3.0	2.20
1989	3	0	3	1	5	55	3.1	1.60
1990	3	0	3	1	6	51	3.3	1.72
1991	3	0	5	1	7	42	3.4	2.08
1992	3	0	5	0	8	37	3.6	2.24
Lebanon								
1988	7	0	9	0	16	44	3.3	4.89
1989	7	0	30	0	37	20	3.3	11.19
1990	10	0	14	0	24	41	3.3	7.07
1991	13	0	11	0	24	54	3.4	7.12
1992	13	0	11	0	24	55	3.4	7.09
Saudi Arabia								
1988	0	0	52	0	52	0	15.3	3.39
1989	0	0	49	1	48	0	16.0	3.00
1990	0	0	54	0	54	0	16.3	3.32
1991	0	0	54	1	54	0	16.5	3.24
1992	0	0	55	0	55	0	17.1	3.23

Continued--

Appendix table 33--Cheese indicators in North Africa and the Middle East: 1988-92--Continued

Region/country year	Production	Ending Stocks	Imports	Exports	Consumption	Self- suffic- iency ratio 1/	Population	Total per capita consump- tion
	-----1,000 tons-----					percent	millions	kilograms
Syria								
1988	67	0	1	0	68	98	11.8	5.75
1989	66	0	1	0	67	99	12.2	5.48
1990	64	0	1	1	65	99	12.7	5.11
1991	66	0	1	0	67	99	13.2	5.07
1992	68	0	1	0	69	99	13.7	4.99
Turkey								
1988	139	0	1	4	136	102	54.3	2.51
1989	140	0	1	3	138	101	55.5	2.49
1990	139	0	2	3	137	101	56.7	2.42
1991	141	0	3	2	142	99	57.9	2.44
1992	141	0	3	2	142	99	59.2	2.40
Yemen								
1988	23	0	3	0	25	90	9.2	2.74
1989	23	0	3	0	26	87	9.4	2.75
1990	23	0	5	0	27	83	9.7	2.79
1991	23	0	3	0	26	89	10.1	2.55
1992	23	0	3	0	26	88	10.4	2.51
North Africa								
1988	283	15	48	1	345	82	111.7	3.09
1989	313	15	53	6	375	84	114.4	3.28
1990	324	15	43	2	380	85	117.1	3.24
1991	304	15	42	2	360	85	119.9	3.00
1992	315	15	43	2	371	85	122.7	3.03
Algeria								
1988	1	0	9	0	10	10	24.1	0.41
1989	1	0	5	0	6	17	24.7	0.24
1990	1	0	1	0	2	50	25.4	0.08
1991	1	0	4	0	5	19	26.0	0.20
1992	1	0	4	0	5	20	26.7	0.19
Egypt								
1988	270	15	20	1	304	89	51.3	5.93
1989	300	15	30	6	339	88	52.5	6.45
1990	310	15	30	2	353	88	53.8	6.56
1991	290	15	26	2	329	88	55.1	5.97
1992	300	15	27	2	340	88	56.4	6.03
Libya								
1988	0	0	16	0	16	0	4.0	4.03
1989	0	0	14	0	14	0	4.1	3.42
1990	0	0	10	0	10	0	4.2	2.37
1991	0	0	10	0	10	0	4.4	2.30
1992	0	0	10	0	10	0	4.5	2.23
Morocco								
1988	7	0	1	0	9	83	24.5	0.35
1989	7	0	2	0	9	79	25.1	0.37
1990	7	0	1	0	9	85	25.6	0.34
1991	8	0	1	0	9	88	26.2	0.33
1992	8	0	1	0	9	89	26.7	0.33
Tunisia								
1988	4	0	2	0	6	71	7.8	0.81
1989	5	0	2	0	7	72	7.9	0.87
1990	5	0	0	0	6	93	8.1	0.72
1991	6	0	1	0	7	88	8.3	0.80
1992	6	0	1	0	7	87	8.4	0.88

1/ Production/consumption - A self-sufficiency ratio greater than 100 is due to stock changes.

2/ Includes Bahrain, Kuwait, Oman, Qatar, United Arab Emirates.

Sources: USDA, FAS PS&amp;D database, April 1993; FAO Agrostat database.



Appendix table 34--Income and population assumptions for commodity forecasts, 1993-98

Year	Algeria	Egypt	Iran	Iraq	Israel	Jordan	Morocco	Saudi Arabia	Tunisia	Turkey	Yemen
Annual real GDP growth											
	Percent										
1993	2.8	0.5	6.5	0.5	6.5	6.0	6.4	1.8	4.1	3.9	0.0
1994	7.0	0.8	7.2	0.5	6.5	5.0	5.0	1.8	6.4	4.6	1.2
1995	5.6	1.6	6.0	1.0	6.5	5.0	5.0	2.0	6.6	5.0	1.2
1996	5.6	2.0	5.9	2.0	6.3	5.2	5.0	3.0	6.7	5.0	1.5
1997	5.6	2.3	5.8	2.5	5.8	5.2	5.0	3.5	6.7	5.0	1.5
1998	5.6	2.0	5.5	2.5	5.5	5.2	5.0	3.5	6.7	5.0	2.0
Annual Population growth											
	Percent										
1993	2.0	2.3	2.7	3.8	3.6	4.2	2.1	3.3	2.0	2.1	3.3
1994	2.0	2.3	2.7	3.8	2.7	4.2	2.0	3.2	1.9	2.1	3.3
1995	2.0	2.3	2.7	3.8	1.8	4.1	2.0	3.2	1.8	2.0	3.4
1996	2.0	2.1	2.7	3.7	1.3	3.5	1.7	3.2	1.7	1.9	3.4
1997	2.0	2.1	2.7	3.7	1.3	3.5	1.7	3.2	1.7	1.9	3.4
1998	2.0	2.1	2.7	3.7	1.3	3.5	1.7	3.2	1.7	1.9	3.4

Sources: IMF, DRI, U.S. Bureau of the Census.

Appendix table 35--Calorie consumption by commodity in NAME, 1990

Country	Per capita daily calorie intake									
	Total Food		Cereals		Wheat		Animal Products		Vegetable Oils	
	Calories 1990	Percent change 1980-90	Calories 1990	Percent change 1980-90	Calories 1990	Percent change 1980-90	Calories 1990	Percent change 1980-90	Calories 1990	Percent change 1980-90
Algeria	2,989	13.3	1,641	8.3	1,492	7.5	322	16.3	380	29.3
Egypt	3,318	7.7	2,114	7.9	1,206	12.0	249	6.4	283	-5.4
Libya	3,353	-3.5	1,503	-1.2	1,278	-0.2	471	-20.4	512	-0.6
Morocco	3,052	13.5	1,702	12.6	1,334	14.4	182	-5.2	286	25.4
Tunisia	3,169	12.0	1,662	6.3	1,586	5.6	275	16.0	545	38.0
North Africa	3,176	8.6	1,724	6.8	1,379	7.9	300	2.6	401	17.4
Iran	3,038	4.5	1,904	7.0	1,493	14.7	256	-8.6	288	13.4
Iraq	3,250	19.0	2,016	20.7	1,537	25.0	236	-7.8	388	68.7
Israel	3,204	7.6	1,022	-5.3	937	-6.2	651	7.3	562	17.8
Jordan	2,704	6.8	1,413	3.3	1,168	-4.4	290	-5.2	292	83.7
Kuwait	3,230	6.6	1,182	6.6	652	3.3	786	1.3	435	76.8
Lebanon	3,160	17.3	1,192	11.6	1,071	11.1	431	-5.7	460	58.1
Saudi	3,023	9.1	1,586	22.4	1,320	100.0	451	-8.2	286	1.1
Syria	3,107	6.3	1,670	22.6	1,538	23.5	352	-16.6	354	37.7
Turkey	3,262	7.2	1,548	-2.4	1,288	-8.5	238	-18.8	466	38.3
UAE	3,331	-0.5	1,148	-4.7	634	-6.8	851	-8.3	256	-28.5
Yemen	2,280	10.5	1,529	16.5	1,003	80.1	188	-17.9	166	53.7
Middle East	3,054	8.6	1,474	8.9	1,149	21.1	430	-8.0	359	38.3
Percent of total										
Algeria	---	---	54.9	-4.4	49.9	-5.1	10.8	2.6	0.1	-98.9
Egypt	---	---	63.7	0.2	36.4	4.0	7.5	-1.2	8.5	-12.1
Libya	---	---	44.8	2.4	38.1	3.4	14.1	-17.6	15.3	3.0
Morocco	---	---	55.8	-0.9	43.7	0.8	6.0	-16.5	9.4	10.5
Tunisia	---	---	52.5	-5.1	50.1	-5.7	8.7	3.6	17.2	23.2
North Africa	---	---	54.3	-1.6	43.6	-0.5	9.4	-5.8	10.1	-14.9
Iran	---	---	62.7	2.4	49.1	9.7	8.4	-12.5	9.5	8.5
Iraq	---	---	62.0	1.4	47.3	5.0	7.3	-22.5	11.9	41.8
Israel	---	---	31.9	-12.0	29.2	-12.8	20.3	-0.3	17.5	9.5
Jordan	---	---	52.3	-3.3	43.2	-10.5	10.7	-11.3	10.8	72.0
Kuwait	---	---	36.6	-0.0	20.2	-3.1	24.3	-5.0	13.5	65.9
Lebanon	---	---	37.7	-4.8	33.9	-5.3	13.6	-19.6	14.6	34.8
Saudi	---	---	52.5	12.2	43.7	83.4	14.9	-15.8	9.5	-7.3
Syria	---	---	53.8	15.4	49.5	16.2	11.3	-21.5	11.4	29.6
Turkey	---	---	47.5	-8.9	39.5	-14.6	7.3	-24.2	14.3	29.0
UAE	---	---	34.5	-4.2	19.0	-6.3	25.6	-7.9	7.7	-28.2
Yemen	---	---	67.1	5.4	44.0	63.0	8.3	-25.7	7.3	39.1
Middle East	---	---	48.9	0.3	38.1	11.3	13.8	-15.1	11.6	26.8
Dairy (milk ex-butter)										
Calories	1990	Percent change 1980-90	Calories	Percent change 1980-90	Calories	Percent change 1980-90	Calories	Percent change 1980-90	Calories	Percent change 1980-90
Algeria	165	10.0	165	10.0	165	10.0	165	10.0	165	10.0
Egypt	48	-12.7	48	-12.7	48	-12.7	48	-12.7	48	-12.7
Libya	200	-2.0	200	-2.0	200	-2.0	200	-2.0	200	-2.0
Morocco	46	-2.1	46	-2.1	46	-2.1	46	-2.1	46	-2.1
Tunisia	119	24.0	119	24.0	119	24.0	119	24.0	119	24.0
North Africa	116	3.4	116	3.4	116	3.4	116	3.4	116	3.4
Iran	80	-10.1	80	-10.1	80	-10.1	80	-10.1	80	-10.1
Iraq	73	-29.1	73	-29.1	73	-29.1	73	-29.1	73	-29.1
Israel	233	3.6	233	3.6	233	3.6	233	3.6	233	3.6
Jordan	113	-15.0	113	-15.0	113	-15.0	113	-15.0	113	-15.0
Kuwait	258	-4.4	258	-4.4	258	-4.4	258	-4.4	258	-4.4
Lebanon	132	-13.2	132	-13.2	132	-13.2	132	-13.2	132	-13.2
Saudi	146	-21.9	146	-21.9	146	-21.9	146	-21.9	146	-21.9
Syria	169	14.2	169	14.2	169	14.2	169	14.2	169	14.2
Turkey	67	-43.2	67	-43.2	67	-43.2	67	-43.2	67	-43.2
UAE	260	-12.8	260	-12.8	260	-12.8	260	-12.8	260	-12.8
Yemen	72	-24.2	72	-24.2	72	-24.2	72	-24.2	72	-24.2
Middle East	146	-14.2	146	-14.2	146	-14.2	146	-14.2	146	-14.2
Meat										
Calories	1990	Percent change 1980-90	Calories	Percent change 1980-90	Calories	Percent change 1980-90	Calories	Percent change 1980-90	Calories	Percent change 1980-90
Algeria	46	-8.0	46	-8.0	46	-8.0	46	-8.0	46	-8.0
Egypt	90	45.2	90	45.2	90	45.2	90	45.2	90	45.2
Libya	182	-29.2	182	-29.2	182	-29.2	182	-29.2	182	-29.2
Morocco	63	-1.6	63	-1.6	63	-1.6	63	-1.6	63	-1.6
Tunisia	85	23.2	85	23.2	85	23.2	85	23.2	85	23.2
North Africa	93	5.9	93	5.9	93	5.9	93	5.9	93	5.9
Iran	105	-6.3	105	-6.3	105	-6.3	105	-6.3	105	-6.3
Iraq	118	28.3	118	28.3	118	28.3	118	28.3	118	28.3
Israel	249	9.2	249	9.2	249	9.2	249	9.2	249	9.2
Jordan	135	23.9	135	23.9	135	23.9	135	23.9	135	23.9
Kuwait	335	8.1	335	8.1	335	8.1	335	8.1	335	8.1
Lebanon	187	0.0	187	0.0	187	0.0	187	0.0	187	0.0
Saudi	206	5.6	206	5.6	206	5.6	206	5.6	206	5.6
Syria	91	-22.2	91	-22.2	91	-22.2	91	-22.2	91	-22.2
Turkey	79	1.3	79	1.3	79	1.3	79	1.3	79	1.3
UAE	376	-7.2	376	-7.2	376	-7.2	376	-7.2	376	-7.2
Yemen	75	-1.3	75	-1.3	75	-1.3	75	-1.3	75	-1.3
Middle East	178	3.6	178	3.6	178	3.6	178	3.6	178	3.6
Sugar										
Calories	1990	Percent change 1980-90	Calories	Percent change 1980-90	Calories	Percent change 1980-90	Calories	Percent change 1980-90	Calories	Percent change 1980-90
Algeria	372	26.5	372	26.5	372	26.5	372	26.5	372	26.5
Egypt	314	24.6	314	24.6	314	24.6	314	24.6	314	24.6
Libya	409	13.3	409	13.3	409	13.3	409	13.3	409	13.3
Morocco	362	7.7	362	7.7	362	7.7	362	7.7	362	7.7
Tunisia	273	11.4	273	11.4	273	11.4	273	11.4	273	11.4
North Africa	346	16.7	346	16.7	346	16.7	346	16.7	346	16.7
Iran	214	-26.0	214	-26.0	214	-26.0	214	-26.0	214	-26.0
Iraq	319	1.0	319	1.0	319	1.0	319	1.0	319	1.0
Israel	395	23.1	395	23.1	395	23.1	395	23.1	395	23.1
Jordan	431	-3.4	431	-3.4	431	-3.4	431	-3.4	431	-3.4
Kuwait	314	-25.4	314	-25.4	314	-25.4	314	-25.4	314	-25.4
Lebanon	331	5.8	331	5.8	331	5.8	331	5.8	331	5.8
Saudi	253	13.0	253	13.0	253	13.0	253	13.0	253	13.0
Syria	294	-12.5	294	-12.5	294	-12.5	294	-12.5	294	-12.5
Turkey	310	28.6	310	28.6	310	28.6	310	28.6	310	28.6
UAE	295	5.7	295	5.7	295	5.7	295	5.7	295	5.7
Yemen	213	23.8	213	23.8	213	23.8	213	23.8	213	23.8
Middle East	306	3.1	306	3.1	306	3.1	306	3.1	306	3.1

--- = not applicable; Source: FAO Agrostat.



Appendix table 36--Livestock Inventory: North Africa and the Middle East: 1988-92 average

Region/country	Cattle	Buffalo	Sheep	Goat	Pigs	Chickens/ turkeys	Other 1/
-----1,000 head-----							
North Africa	8,250	2,821	45,965	14,307	121	232	4,725
Algeria	1,417	---	17,709	2,418	5	73	639
Egypt	2,758	2,821	3,470	4,367	102	36	1,638
Libya	106	---	4,940	1,030	---	47	215
Morocco	3,297	---	14,029	5,287	9	38	1,658
Tunisia	673	---	5,818	1,206	5	37	576
Middle East	24,788	937	126,684	47,006	456	530	6,893
Bahrain	15	---	8	16	---	1	1
Cyprus	50	---	311	209	279	3	8
Iran	6,644	296	44,133	23,132	---	160	2,484
Iraq	1,545	135	8,980	1,530	---	68	519
Israel	188	---	373	117	121	27	21
Jordan	29	---	1,455	497	---	48	43
Kuwait	21	---	194	25	---	21	9
Lebanon	63	---	216	425	47	22	18
Oman	136	---	139	716	---	2	109
Oatar	10	---	127	88	---	2	23
Saudi Arabia	226	---	6,520	3,561	---	73	518
Syria	766	1	14,015	1,006	1	14	250
Turkey	13,910	506	46,380	937	8	60	1,938
UAE	45	---	222	569	---	6	99
Yemen	1,140	---	3,610	3,178	---	23	853

1/ Other includes Horses, Mules, Asses, Camels and Ducks.

Source: USDA, Production, Supply and Distribution database, April 1993; FAO, Agrostat database.

Appendix table 37--U.S. exports of animals and animal products to NAME countries, 1988-92--Continued

Commodity/ Year	Unit	Syria	Turkey	Yemen	North Africa	Algeria	Egypt	Libya	Morocco	Tunisia
Animals and animal products		1,000								
1988		55.1	155.9	0.0	1,227.2	173.6	867.9	0.0	183.9	1.8
1989	---	39.3	244.2	0.0	835.9	231.5	324.3	0.0	278.6	1.5
1990		91.1	400.2	0.8	748.1	200.8	393.2	0.0	153.9	0.1
1991		193.1	311.9	0.3	681.7	125.0	417.1	0.0	139.6	0.0
1992		332.1	692.0	46.0	742.4	49.5	635.7	0.0	57.0	0.1
Meats and meat products										
1988		0.0	0.5	0.0	29.0	0.0	29.0	0.0	0.0	0.0
1989	Tons	0.0	0.0	0.0	22.6	0.0	22.6	0.0	0.0	0.0
1990		0.0	0.0	0.0	15.8	0.0	15.7	0.0	0.0	0.1
1991		0.0	0.0	0.0	6.4	0.0	6.4	0.0	0.0	0.0
1992		0.0	0.0	0.0	10.0	0.0	10.0	0.0	0.0	0.0
Beef and veal										
1988		0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0
1989	Tons	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0
1990		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992		0.0	0.0	0.0	1.5	0.0	1.5	0.0	0.0	0.0
Lamb, mutton, and goat										
1988		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989	Tons	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Variety meats 2/										
1988										
1989	Tons	0.0	0.5	0.0	28.9	0.0	28.9	0.0	0.0	0.0
1990		0.0	0.0	0.0	22.5	0.0	22.4	0.0	0.0	0.0
1991		0.0	0.0	0.0	15.8	0.0	15.7	0.0	0.0	0.1
1992		0.0	0.0	0.0	6.3	0.0	6.3	0.0	0.0	0.0
		0.0	0.0	0.0	8.5	0.0	8.5	0.0	0.0	0.0
Poultry meats										
1988										
1989	Tons	0.0	0.0	0.0	12.4	0.0	12.4	0.0	0.0	0.0
1990		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991		0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0
1992		0.0	0.0	0.0	0.4	0.0	0.4	0.0	0.0	0.0
		0.0	0.0	0.0	0.2	0.0	0.2	0.0	0.0	0.0
Chickens										
1988										
1989	Tons									
1990		0.0	0.0	0.0	8.1	0.0	8.1	0.0	0.0	0.0
1991		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992		0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0
		0.0	0.0	0.0	0.4	0.0	0.4	0.0	0.0	0.0
		0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0
Turkeys										
1988										
1989	Tons									
1990										
1991		0.0	0.0	0.0	4.3	0.0	4.3	0.0	0.0	0.0
1992		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0
Eggs										
1988		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989	---	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990		0.0	0.0	0.0	65.9	0.0	65.9	0.0	0.0	0.0
1991		0.0	0.0	0.0	134.8	0.0	134.8	0.0	0.0	0.0
1992		0.0	9.5	0.0	3.8	0.0	3.8	0.0	0.0	0.0

--- = not applicable; 1/ Includes Bahrain, Kuwait, Oman, Qatar, UAE.

2/ Includes edible offals.

Source: USDA, ERS, FATUS, calendar year database.



Appendix table 38--U.S. exports of oilseeds and oilseed products to NAME countries, 1988-92--Continued

Commodity/year	Syria	Turkey	Yemen	North Africa	Algeria	Egypt	Libya	Morocco	Tunisia
1,000 tons									
Oilseeds and products									
1988	4.79	85.9	0.0	909.1	485.3	290.2	0.0	51.2	82.4
1989	8.12	39.3	0.4	904.8	436.6	300.4	0.0	110.2	57.6
1990	31.75	28.2	16.7	732.9	416.2	232.4	0.0	56.5	27.8
1991	55.10	124.9	28.8	737.5	410.5	170.2	0.0	112.6	44.3
1992	48.52	225.4	26.2	732.9	427.4	88.9	0.0	109.0	107.6
Oilcake and meal									
1988	4.79	0.0	0.0	628.1	411.4	195.8	0.0	0.0	20.9
1989	8.12	2.6	0.0	564.0	389.1	165.9	0.0	0.0	9.0
1990	31.73	0.0	16.7	567.1	373.5	177.6	0.0	0.0	15.9
1991	55.06	41.4	28.8	444.9	323.5	121.4	0.0	0.0	0.0
1992	48.52	75.7	26.2	294.3	247.8	46.5	0.0	0.0	0.0
Soybean meal									
1988	4.79	0.0	0.0	628.1	411.4	195.8	0.0	0.0	20.9
1989	8.12	2.6	0.0	564.0	389.1	165.9	0.0	0.0	9.0
1990	31.73	0.0	16.7	567.1	373.5	177.6	0.0	0.0	15.9
1991	55.06	41.4	28.8	444.9	323.5	121.4	0.0	0.0	0.0
1992	48.52	75.6	26.2	294.3	247.8	46.5	0.0	0.0	0.0
Oilseeds									
1988	0.00	0.8	0.0	67.7	0.0	58.7	0.0	9.0	0.0
1989	0.00	19.0	0.0	51.5	0.0	38.4	0.0	13.0	0.0
1990	0.00	0.1	0.0	40.0	0.0	39.9	0.0	0.0	0.0
1991	0.00	0.0	0.0	14.6	0.0	0.0	0.0	14.6	0.0
1992	0.00	41.7	0.0	4.7	0.0	4.6	0.0	0.1	0.0
Soybeans									
1988	0.00	0.0	0.0	67.7	0.0	58.6	0.0	9.0	0.0
1989	0.00	17.7	0.0	51.5	0.0	38.4	0.0	13.0	0.0
1990	0.00	0.0	0.0	24.8	0.0	24.8	0.0	0.0	0.0
1991	0.00	0.0	0.0	14.6	0.0	0.0	0.0	14.6	0.0
1992	0.00	33.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vegetable oils									
1988	0.00	85.1	0.0	213.2	73.9	35.6	0.0	42.1	61.6
1989	0.00	17.7	0.4	289.3	47.5	96.1	0.0	97.2	48.6
1990	0.03	28.1	0.0	125.9	42.7	14.8	0.0	56.5	11.9
1991	0.04	83.5	0.0	278.0	87.0	48.8	0.0	98.0	44.3
1992	0.00	108.0	0.0	433.9	179.6	37.9	0.0	108.9	107.6
Soybean oil									
1988	0.00	17.1	0.0	104.4	0.0	0.7	0.0	42.1	61.6
1989	0.00	0.0	0.0	147.5	3.0	0.0	0.0	95.9	48.6
1990	0.00	0.0	0.0	68.0	0.0	0.0	0.0	56.1	11.9
1991	0.00	41.0	0.0	185.6	43.3	0.0	0.0	98.0	44.3
1992	0.00	71.4	0.0	284.6	68.1	0.0	0.0	108.9	107.6
Sunflower oil									
1988	0.00	49.5	0.0	72.8	72.8	0.0	0.0	0.0	0.0
1989	0.00	0.0	0.0	100.1	43.5	56.6	0.0	0.0	0.0
1990	0.00	1.8	0.0	42.7	42.7	0.0	0.0	0.0	0.0
1991	0.00	0.0	0.0	71.3	37.3	33.9	0.0	0.0	0.0
1992	0.00	0.0	0.0	127.5	102.5	25.0	0.0	0.0	0.0
Corn oil									
1988	0.00	5.0	0.0	6.4	1.0	5.3	0.0	0.0	0.0
1989	0.00	15.6	0.4	1.2	0.0	0.0	0.0	1.2	0.0
1990	0.01	26.3	0.0	0.4	0.0	0.0	0.0	0.4	0.0
1991	0.00	37.0	0.0	6.3	6.3	0.0	0.0	0.0	0.0
1992	0.00	29.6	0.0	4.6	0.0	4.6	0.0	0.0	0.0

1/ Includes Bahrain, Kuwait, Oman, Qatar, United Arab Emirates.

Source: USDA, ERS, FATUS, calendar year database.

Appendix table 39--U.S. grain exports to NAME countries, 1988-92

Commodity/ Year	Middle East	Cyprus	Gulf States 1/	Iran	Iraq	Israel	Jordan	Lebanon	Saudi Arabia
1,000 tons									
Wheat, unmilled									
1988	1,682.4	25.0	0.0	0.0	895.1	383.6	42.1	0.0	155.0
1989	2,611.7	51.4	53.8	0.0	1,010.9	503.8	397.8	0.0	0.0
1990	1,787.8	30.0	0.0	0.0	335.1	495.5	600.7	0.0	0.2
1991	1,089.7	37.6	28.3	0.0	0.0	500.6	350.1	0.0	0.4
1992	1,367.2	62.6	25.4	0.0	0.0	621.1	242.4	0.0	0.7
Wheat flour									
1988	86.5	0.0	0.6	0.0	0.0	15.4	0.9	2.0	0.0
1989	165.0	0.0	0.1	0.0	78.5	14.3	3.1	1.1	0.0
1990	38.8	0.7	0.2	0.0	0.0	6.9	4.3	0.0	0.0
1991	150.1	0.0	0.1	0.0	0.0	4.7	26.5	0.0	0.0
1992	270.3	0.0	0.1	0.0	0.0	3.7	0.2	0.0	0.0
Rice-paddy, milled, parb.									
1988	885.1	0.3	0.0	0.0	513.1	1.1	87.8	0.2	192.7
1989	927.6	0.3	0.0	0.0	391.8	9.5	61.7	13.8	189.1
1990	699.8	6.0	0.0	0.0	221.6	8.8	72.3	10.4	190.7
1991	333.9	3.2	0.0	0.0	0.0	5.7	48.2	11.0	167.8
1992	479.8	0.5	0.0	46.3	0.0	10.4	17.2	7.5	208.9
Feed grains and products									
1988	3,629.9	95.0	0.0	0.0	800.0	894.8	173.3	66.5	1,223.8
1989	4,122.6	139.3	0.6	0.0	758.3	726.0	465.0	43.1	1,361.1
1990	4,741.2	143.0	0.1	0.0	520.7	773.6	557.8	56.6	1,987.6
1991	3,784.3	114.5	0.2	115.0	0.0	765.0	442.1	104.1	1,708.1
1992	3,646.4	148.0	53.9	278.5	0.0	849.7	512.4	120.5	1,166.8
Barley									
1988	992.2	12.2	0.0	0.0	153.0	193.3	0.0	0.0	633.7
1989	1,216.2	68.0	0.0	0.0	187.4	100.0	88.5	0.0	714.7
1990	1,640.4	49.7	0.0	0.0	104.3	81.2	198.6	0.0	1,206.6
1991	1,405.6	0.0	0.0	0.0	0.0	272.7	147.6	0.0	985.2
1992	1,221.4	100.0	0.0	0.0	0.0	258.5	193.2	0.0	669.5
Corn									
1988	2,290.8	82.8	142.2	0.0	646.9	357.7	173.2	66.5	587.4
1989	2,247.7	71.2	124.7	0.0	565.4	261.5	140.6	43.1	646.2
1990	2,545.0	93.3	54.4	0.0	413.5	321.2	204.3	56.6	780.7
1991	2,045.7	114.5	83.1	115.0	0.0	328.7	224.0	104.1	712.7
1992	2,067.2	48.0	69.7	278.5	0.0	462.3	249.2	120.5	497.1
Grain sorghums									
1988	341.1	0.0	0.0	0.0	0.0	341.1	0.0	0.0	0.0
1989	651.5	0.0	0.0	0.0	0.0	363.3	236.0	0.0	0.0
1990	551.9	0.0	0.0	0.0	0.0	370.8	154.9	0.0	0.0
1991	331.3	0.0	0.0	0.0	0.0	162.3	70.5	0.0	10.0
1992	355.5	0.0	0.0	0.0	0.0	127.0	70.0	0.0	0.0

Continued--



Appendix table 39--U.S. Exports of grains to NAME countries, 1988-92--Continued

Commodity/ Year	Syria	Turkey	Yemen	North Africa	Algeria	Egypt	Libya	Morocco	Tunisia
1,000 tons									
Wheat, unmilled									
1988	0.0	0.0	181.7	6,406.2	1,629.9	2,814.3	0.0	1,316.3	645.7
1989	26.3	518.2	49.5	5,716.3	1,279.6	3,391.0	0.0	794.6	251.2
1990	0.0	173.6	152.8	3,972.6	1,432.9	1,653.7	0.0	555.3	330.8
1991	0.0	0.0	172.9	5,557.2	1,667.0	3,078.7	0.0	426.5	385.0
1992	0.0	0.0	414.9	5,916.1	1,010.5	4,044.1	0.0	673.9	187.6
Wheat flour									
1988	2.7	0.0	65.0	682.2	8.3	662.4	0.0	9.0	2.5
1989	4.1	0.0	63.8	545.3	0.0	528.4	0.0	16.9	0.0
1990	0.0	0.0	26.7	349.1	0.0	334.6	0.0	14.4	0.0
1991	0.0	0.9	117.9	304.9	0.0	293.2	0.0	11.7	0.0
1992	0.0	0.0	266.3	116.2	0.0	113.1	0.0	3.1	0.0
Rice-paddy, milled, parb.									
1988	0.0	58.0	15.9	18.5	18.5	0.0	0.0	0.0	0.0
1989	0.0	199.4	37.8	27.7	14.0	0.7	0.0	12.9	0.0
1990	0.0	150.0	34.2	52.9	27.1	0.0	0.0	25.8	0.0
1991	0.0	81.3	12.5	30.7	0.0	0.0	0.0	30.6	0.1
1992	0.0	180.6	1.0	22.7	22.4	0.0	0.0	0.0	0.2
Feed grains and products									
1988	24.8	209.2	0.0	3,366.4	1,741.3	1,075.6	0.0	195.0	354.6
1989	62.4	415.7	26.8	2,444.2	981.5	1,067.1	0.0	58.4	337.2
1990	206.3	301.5	139.5	3,878.7	1,494.5	1,818.9	0.0	170.0	395.3
1991	174.0	165.1	113.0	2,780.7	1,227.1	1,172.5	0.0	165.9	215.2
1992	94.6	267.5	138.8	2,401.6	1,048.4	1,019.5	0.0	161.5	172.3
Barley									
1988	0.0	0.0	0.0	750.7	583.2	0.0	0.0	0.0	167.5
1989	0.0	57.7	0.0	87.4	0.0	0.0	0.0	0.0	87.4
1990	0.0	0.0	0.0	304.0	226.6	0.0	0.0	0.0	77.4
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992	0.0	0.3	0.0	103.0	102.6	0.0	0.0	0.4	0.0
Corn									
1988	24.8	209.2	0.0	2,560.2	1,156.2	1,075.6	0.0	141.6	186.9
1989	62.4	305.8	26.8	2,284.6	981.5	1,067.0	0.0	46.9	189.2
1990	206.3	275.4	139.5	3,426.0	1,243.4	1,817.7	0.0	162.0	202.9
1991	174.0	76.6	113.0	2,677.3	1,227.1	1,072.4	0.0	162.6	215.2
1992	94.6	108.6	138.8	2,298.2	945.8	1,019.1	0.0	161.1	172.3
Grain sorghums									
1988	0.0	0.0	0.0	53.4	0.0	0.0	0.0	53.4	0.0
1989	0.0	52.2	0.0	60.7	0.0	0.1	0.0	0.0	60.6
1990	0.0	26.2	0.0	139.5	24.5	0.0	0.0	0.0	115.0
1991	0.0	88.5	0.0	100.0	0.0	100.0	0.0	0.0	0.0
1992	0.0	158.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0

1/ Includes Bahrain, Kuwait, Oman, Qatar, United Arab Emirates.

Source: USDA, ERS, FATUS, calendar year database.

Appendix table 40--U.S. exports of livestock and dairy products to NAME countries, 1988-92

Commodity/ year	Unit	Middle East	Cyprus	Gulf States 1/	Iran	Iraq	Israel	Jordan	Lebanon	Saudi Arabia
<b>Animals (live)</b>										
excl. poultry										
1988	---	9,090	0	5	0	156	0	4	0	565
1989		692	0	0	0	0	437	0	0	186
1990		141	3	0	0	0	13	0	0	125
1991		17	2	0	0	0	0	0	0	15
1992		931	5	88	0	0	42	100	0	690
<b>Cattle and calves (live)</b>										
1988	number	9,052	0	0	0	156	0	0	0	536
1989		249	0	0	0	0	0	0	0	180
1990		120	0	0	0	0	0	0	0	120
1991		0	0	0	0	0	0	0	0	0
1992		685	0	0	0	0	0	100	0	585
<b>Poultry (live)</b>										
1988	---	398,577	0	0	0	66,780	28,520	70,950	29,900	120,727
1989		304,113	49,792	0	0	0	18,300	18,420	0	127,221
1990		512,485	13,710	4560	0	0	44,750	0	12,000	234,583
1991		579,782	0	0	46,592	0	113,050	0	0	153,048
1992		1,635,257	114,285	6055	552,324	0	167,507	16,100	0	158,030
<b>Baby chicks</b>										
1988	number	398,577	0	0	0	66,780	28,520	70,950	29,900	120,727
1989		287,113	49,792	0	0	0	18,300	18,420	0	127,221
1990		512,485	13,710	4560	0	0	44,750	0	12,000	234,583
1991		579,782	0	0	46,592	0	113,050	0	0	153,048
1992		1,497,945	114,285	6055	552,324	0	167,507	16,100	0	150,105
<b>Butter 2/</b>										
1988		5,743	0	0	0	5,743	0	0	0	0
1989	Tons	4,604	0	0	0	4,525	0	0	0	79
1990		2,846	0	0	0	2,827	0	0	0	19
1991		0	0	0	0	0	0	0	0	0
1992		269	0	117	0	0	0	0	0	152
<b>Cheese</b>										
1988		10,017	0	1	0	9,802	59	24	0	131
1989	Tons	325	0	11	0	222	0	19	14	49
1990		1,977	0	80	0	1,675	27	0	0	195
1991		312	0	134	0	0	0	0	22	155
1992		481	0	154	0	0	40	0	21	121
<b>Evaporated condensed milk</b>										
1988		1,351	0	0	0	369	0	0	0	982
1989	Tons	54	0	0	0	0	31	0	0	23
1990		34	0	0	0	0	0	0	0	34
1991		157	0	0	0	0	0	0	0	157
1992		80	0	0	0	0	0	0	0	80
<b>Nonfat dry milk</b>										
1988		14,074	0	442	0	12,984	291	113	0	244
1989	Tons	5,380	0	2572	0	2,780	28	0	0	0
1990		2,012	0	1439	0	553	0	0	20	0
1991		125	0	1	0	0	0	0	0	124
1992		852	0	46	0	0	0	104	0	702
<b>Other dairy products</b>										
1988	---	3,904	12	467	0	3,145	33	2	16	204
1989		1,350	8	874	0	1	19	0	15	405
1990		2,334	8	885	0	1,115	40	0	20	236
1991		2,936	8	720	0	0	41	0	56	2,030
1992		6,096	32	861	0	0	204	0	19	4,236

Continued--

Appendix table 40--U.S. exports of livestock and dairy products to NAME countries, 1988-92--Continued

Commodity/ year	Unit	Syria	Turkey	Yemen	North Africa	Algeria	Egypt	Libya	Morocco	Tunisia
<b>Animals (live)</b>										
excl. poultry										
1988	---	0	8,360	0	2,681	0	842	0	43	1,796
1989		0	69	0	1,504	0	3	0	7	1,494
1990		0	0	0	525	0	525	0	0	0
1991		0	0	0	1,985	251	1,219	0	515	0
1992		6	0	0	599	0	599	0	0	0
<b>Cattle and calves (live)</b>										
1988	number	0	8,360	0	2,681	0	842	0	43	1,796
1989		0	69	0	1,494	0	0	0	0	1,494
1990		0	0	0	525	0	525	0	0	0
1991		0	0	0	1,967	251	1,213	0	503	0
1992		0	0	0	599	0	599	0	0	0
<b>Poultry (live)</b>										
1988	---	55,075	26,625	0	797,775	0	677,240	0	120,535	0
1989		39,280	51,100	0	490,193	0	229,446	0	260,747	0
1990		91,125	111,757	0	439,600	0	291,344	0	148,256	0
1991		193,080	74,012	0	364,807	0	239,507	0	125,300	0
1992		332,080	242,876	46,000	615,576	0	574,446	0	41,130	0
<b>Baby chicks</b>										
1988	number	55,075	26,625	0	708,498	0	587,963	0	120,535	0
1989		39,280	34,100	0	490,193	0	229,446	0	260,747	0
1990		91,125	111,757	0	439,600	0	291,344	0	148,256	0
1991		193,080	74,012	0	364,807	0	239,507	0	125,300	0
1992		225,233	220,336	46,000	589,876	0	548,746	0	41,130	0
<b>Butter 2/</b>										
1988		0	0	0	0	0	0	0	0	0
1989	Tons	0	0	0	0	0	0	0	0	0
1990		0	0	0	0	0	0	0	0	0
1991		0	0	0	3,493	1,588	1,905	0	0	0
1992		0	0	0	6,340	6,340	0	0	0	0
<b>Cheese</b>										
1988		0	0	0	8,046	8,046	0	0	0	0
1989	Tons	10	0	0	600	600	0	0	0	0
1990		0	0	0	0	0	0	0	0	0
1991		0	1	0	10	0	10	0	0	0
1992		15	130	0	1,314	1,003	311	0	0	0
<b>Evaporated condensed milk</b>										
1988		0	0	0	0	0	0	0	0	0
1989	Tons	0	0	0	0	0	0	0	0	0
1990		0	0	0	0	0	0	0	0	0
1991		0	0	0	0	0	0	0	0	0
1992		0	0	0	2,037	2,037	0	0	0	0
<b>Nonfat dry milk</b>										
1988		0	0	0	14,190	9,017	1,138	0	4,035	0
1989	Tons	0	0	0	0	0	0	0	0	0
1990		0	0	0	0	0	0	0	0	0
1991		0	0	0	4,500	4,500	0	0	0	0
1992		0	0	0	5,208	3,600	227	0	1,308	73
<b>Other dairy products</b>										
1988	---	0	25	0	25	0	25	0	0	0
1989		0	28	0	21	0	20	0	1	0
1990		0	30	0	5,012	5,000	9	0	3	0
1991		0	81	0	4,000	92	3,908	0	0	0
1992		0	744	0	5,881	5,000	880	0	1	0

--- = not applicable.

1/ Includes Bahrain, Kuwait, Oman, Qatar, UAE.

2/ Includes anhydrous milkfat



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